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The Health, Science, and the Environment section of the proceedings contains the following 14 papers: "Privacy and the AIDS Crisis: Newspaper Practices Regarding Obituaries and Outings" (Joseph Bernt and Marilyn Greenwald); "Testing Truisms about Science and the Mass Media: The Case of Cold Fusion" (Bruce V. Lewenstein and others); "Comparison of 'The New York Times's' and 'Science's' Coverage of the Birth of Modern Atomic Theory: 1896-1922" (Erik Larson); "Women, Minorities, and AIDS: An Analysis of Issue-Responsive Programming among Philadelphia, Pennsylvania Commercial Radio Stations, 1989-1990. A study by the Philadelphia Lesbian and Gay Task Force" (Roger N. Johnson and others); "News Sources and Power Elites in Newspaper Coverage of the Exxon Valdez Oil Spill" (Conrad Smith); "Routinization, Cooptation and Conflict: Environmental Stories in Two Agricultural Magazines" (Douglas Blanks Hindman); "Whose Public Interest?: A Study of Attention to Women, Minorities and AIDS in Issue-Responsive Commercial Television Programming, 1986-1988. A study by the Philadelphia Lesbian and Gay Task Force". (Rita Addessa and others); "The National Press and Carpal Tunnel Syndrome: A Significant Silence in Occupational Health Coverage" (Barbara Zang); "Environmental Movements and the Public Sphere: The Role of Alternative Media for the Creation of an Alternative Public Sphere" (Gudula Feichtinger); "Predicting Interest in Science and Quasi-Science Newspaper Stories" (Michael A. Shapiro and Saul Sarabia); "Mass Media and the Third AIDS Epidemic: AIDS Knowledge and Acceptance in a Rural Area" (William R. Elliot and others); "Between Facts and Values: Print Media Coverage of the Greenhouse Effect, 1987-1990" (Lee Wilkins); "Knowledge Gap Effects: Audience and Media Factors in Alcohol-Related Health Communications" (Fred Zandpour and Anthony R. Fellow); and "The Smoking and Health Issue in the Daily Press: Influence of the Regional Economy, the Tobacco Institute, and the Objectivity Routine" (C. Kevin Swisher and Stepehn D. Reese). (RS)

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PRIVACY AND THE AIDS CRISIS:

Newspaper Practices Regarding Obituaries and Outings

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PRIVACY AND THE AIDS CRISIS:

Newspaper Practices Regarding Obituaries and Outings[1]

Introduction

There can be little debate that American newspaper editors and publishers over the last decade have focused attention on women and minorities. This interest has extended to the news pages and newsrooms of their papers. The industry has shown renewed concern over the portrayal of women and minorities in the news columns and over hiring practices that ensure those groups are represented in the newsroom. National organizations of news managers, including the American Newspaper Publishers Association, the American Society of Newspaper Editors and others, have spearheaded minority recruiting efforts, and communication researchers are conducting more studies of the portrayal of women and minorities in newspapers.[2]

A minority that has been largely ignored in these efforts, however, is one that comprises about ten percent of the U.S. population: gays and lesbians. A self-identified minority, gays and lesbians often find they fall outside efforts by editors to ensure equal opportunity for minorities. Like some political fringe groups, they are sometimes presumed a threat by so-called "mainstream" readers, and thus create problems for news managers. Unlike most other minorities, they are not immediately identifiable, and thus are in many ways invisible and easy to ignore or diminish.

This exploratory study is a pilot attempt to examine the attitudes and perceptions of daily-newspaper editors about coverage of gays and lesbians, focusing on the issue of outings and on the treatment of gays and lesbians in non-paid obituaries. This study attempts to measure editors' attitudes about their newspapers' own coverage, as well as their perceptions about what, ideally, should or should not be covered and what methods and procedures to employ in that coverage.

The subject of this study--newspaper coverage of gays and lesbians--is interesting for several reasons. Many communication studies have focused on how the media construct a reality for viewers and readers, but this mass-mediated reality is particularly compelling as it relates to gays and lesbians. Because they are a self-identifying minority group, many people have limited exposure to them. If gay or lesbian relatives, colleagues or friends do not identify themselves as homosexuals, the only image of them that many people get comes from the media. As Gross points out, the contribution of the media would be particularly powerful in forming images of them.[3]

The political and social history of the gay liberation movement--and consequently media coverage--is one of dramatic change and turbulence, and it does not follow a conventional pattern of increased acceptance by the public. The movement, which emerged in the late 1960s, gained momentum when the American Psychiatric Association in 1973 said homosexuality was not a mental disease. The movement gained political clout in the late 1970s with the passage of legislative initiatives and gay rights ordinances in many cities. The portrayal in the media of charismatic leaders such as San Francisco Supervisor Harvey Milk also helped the movement gain acceptance.

The Acquired Immune Deficiency Syndrome epidemic, which began receiving wide media attention in the mid-1980s, turned the coverage of gays and lesbians into a medical story, and a negative one at that. The issues of homosexuality and AIDS "[became] inescapably linked with the specter of a plague," as Gross describes this process.[4] Media coverage of AIDS and the gay community in the last decade nearly eclipsed coverage of all other issues important to gays and lesbians, including legislative, social and lifestyle concerns. Gays were now seen as victims or villains.[5]

It is perhaps predictable, then, that many members of the gay and lesbian community are critical of news media coverage of issues important to them. This criticism has taken many forms. Shilts and others believe that reporters and editors virtually ignored the rise of the AIDS epidemic in the early 1980s until the disease began affecting heterosexuals, or until well-known or socially prominent people died from AIDS or AIDS-related diseases.[6] The implication here is that editors felt a fatal disease that affects primarily homosexuals is not worth covering. Kinsella, in his book outlining media coverage of the disease, writes that most media outlets did not report on the AIDS epidemic until they could follow the lead of national news outlets like the New York Times or the wire services, outlets which underreported the AIDS epidemic because editors thought such news might be "impolite."[7]

Gay and lesbian reporters and editors also acknowledge that their own news outlets are not giving readers and viewers an accurate or realistic view of gay life and interests. In a 1982 Columbia Journalism Review article, Ransdell Pierson points out that because many gay reporters remain in the closet, they hesitate to report on gay issues, which are of little interest to heterosexual reporters.[8] Michael O'Loughlin, a San Francisco Examiner lifestyle writer, called editors "homophobic" people who encourage the notion that "America would rather keep homosexuality invisible . . . Both within the newsroom and out in the community, gays will continue to be ignored until they get loud and aggressive, demand equality, voice their concerns and become a political power."[9]

This San Francisco writer may be echoing the views of gays and lesbians when he argues the way to gain acceptance is through political power--power that comes in numbers. Since the advent of the AIDS epidemic in particular, gays and lesbians have attempted to demonstrate the vastness of their numbers and to show the heterosexual majority that, although they may not be aware of it, they have friends, relatives and coworkers who are homosexual. Only when a majority recognizes that homosexuality is more "mainstream" than many people now realize will gays be accepted and become a topic in the news, many gays believe. And media images of gays will determine how close or distant they are from the lives of viewers and readers.

The AIDS epidemic, directly or indirectly, posed many dilemmas for journalists. The most obvious problem was when and how to deal with AIDS and its medical, political and social ramifications. More subtle, however, were the journalistic problems that accompanied AIDS, problems that arose as death tolls climbed rapidly upward in the 1980s, and as many members of the gay community rallied to inform the world of the size and influence of the gay and lesbian community in the United States. Eventually, the smallest newspaper or television station in the tiniest of towns--even those without gay and lesbian populations--were forced to decide on such issues as whether to identify AIDS as the cause of death in obituaries of well-known public figures; whether to run or air wire stories that did so; and, by the mid-1980s, whether it was responsible journalism to print or air stories about attempts to "out" or identify the sexual preferences of local or national public figures. Most of these issues facing journalists, especially so the practice of "outing," resulted from the gay and lesbian community's frustration with the slow pace of gay progress and from their attempts to show that "we are everywhere."

As the AIDS epidemic grew, it was inevitable that journalists would grapple with how to handle the resulting deaths in non-paid obituaries. Small-circulation newspapers routinely run brief stories about the deaths of well-known members of the community. These are usually written by staff reporters, and they run separately from paid obituaries. Larger circulation newspapers often run stories on the deaths of well-known or prominent citizens, or those who once were well known in the community. Shilts notes that at the beginning of the AIDS epidemic, obituaries for people with AIDS routinely omitted cause of death in the name of preserving privacy. It was a practice that hid from the public the widespread nature of the illness, many gays believed. Shilts writes:

> The reluctance of prominent people to publicly acknowledge their AIDS diagnoses left obituary columns strangely empty of actual flesh-and-blood people who were dying of the syndrome. Only the most knowledgeable of obituary readers could detect the presence of this epidemic in the death notices. A thirty-eight-year-old fashion designer dying of "cancer and pneumonia," for example, was a sure giveaway, as was the man in his thirties who left no surviving widow after succumbing to a "lingering" or "lengthy" illness . . . . Sometimes newspapers concealed AIDS as the cause of death because the family did. In fact, the lack of people dying of AIDS in obituary columns led gay journalist Larry Bush to wonder aloud: "What if they gave an epidemic and no one died?"[10]

Shilts notes that obituaries were problematic for gays in other ways. Wives and children, for example, were never listed as survivors in these mysterious death notices, only siblings, nieces and nephews, aunts and uncles--certainly never their lovers, their domestic partners, their longtime companions.[11]

Interestingly, these small obituaries, which usually run inside the newspaper in the vital statistics section, have a dramatic effect in shaping readers' views about reality. First, the obituary section is among the most well-read in the newspaper, and second, causes of death and the stories profiling the obituaries' subjects offer a capsulized version of society's lifestyles and values.[12]

The issue of sexual privacy also arises from recent, more radical attempts by gay activists to show the prevalence of homosexuality in American society. Through a process dubbed "outing," for pulling people "out of the closet," some gay activists are publicizing the sexual preferences of those who have chosen to keep them hidden--usually well-known or socially prominent people. These activists argue outing will show heterosexual Americans that homosexuality is more widespread than they think, while at the same time providing role models for young gays.[13]

Outing has proven to be a phenomenon that cannot be ignored by editors, even if no local outings have occurred in their cities. Shortly after the 1990 death of publisher Malcolm Forbes, The New York gay weekly, Outweek, published a story claiming Forbes was homosexual. Several national publications reported on the story, touching off a debate among journalists about the press's role and ethical responsibilities when it comes to outing. Some journalists have said publishing the names involved in any outing is a violation of sexual privacy. Other editors decry the double standard that allows reporting on the heterosexual love affairs of prominent politicians, yet implicitly labels as a disgrace similar behavior involving homosexuality.[14]

The ethical dimension of AIDS coverage has been a frequent topic of debate among editors and publishers, and consequently, much has been written in popular magazines and journalism trade publications about such topics as the morality of reporting on outings, how to handle obituaries of those who have died from AIDS, and coverage of AIDS generally in the media. Other than recent interest in AIDS, few scholarly studies have been conducted on media coverage of issues of concern to gays and lesbians.

Randy Shilts' And the Band Played On, one of the first books written about the epidemic, discusses media coverage of AIDS,[15] as does Kinsella's Covering the Plague, which deals primarily with the methods and thoughts of those reporters covering AIDS.[16]

The few scholarly studies about AIDS and the media have focused on broadcast rather than print coverage of the subject.[17] Most studies, however, have centered on television and television news portrayal of gays and lesbians, particularly in relation to AIDS. Gross discusses in depth how sexual minorities are covered in the mass media, focusing on network coverage and television portrayals.[18] Cook and Colby, referring to AIDS as the first "living room epidemic," studied network news coverage of the disease to determine how televised images and messages affect the public's knowledge and perception of AIDS.[19] How the broadcast media affect learning about AIDS is also the topic of Stroman and Seltzer's study, "Mass Media Use and Knowledge of AIDS."[20]

Most of the print studies on the disease reach the same conclusion--the print media ignored AIDS until it was no longer seen as a "gay" epidemic. These studies are lacking in, first, further analysis of newspaper coverage of AIDS and, second, concerns of gays and lesbians outside of AIDS and its medical aspects--civic, social, political and legislative concerns. Cook is one of the few to touch on these other concerns in a study of homosexual news on network television. He concludes it is not necessarily any overt homophobia by the nation's editors and reporters that limits news coverage of gay and lesbian interests and lifestyles, but rather the news process itself--the quest for breaking stories and a self-censorship that prohibits stories that might offend the "average" family audience.[21]

Editors and reporters, long known to report on studies but not to embark on any themselves, have also initiated their own studies about the gay community. A study by the American Society of Newspaper Editors does go beyond the issue of AIDS to delve into issues of concern to gay and lesbian journalists. What is still needed is information about how mainstream editors view newspaper coverage, not only of AIDS, but of other interests, concerns, and events of the gay and lesbian community.[22]

Method

The present study focuses on how senior newspaper editors across the country view newspaper coverage of issues of concern to gays and lesbians, with an emphasis on their newspaper's treatment of obituaries when AIDS was the cause of death and on coverage of "outings" and disclosure of sexual orientation. Specifically, the survey instrument included twenty-four items asking editors about practices of their newspapers regarding these issues and their personal opinions about how their newspaper should cover several hypothetical situations. These situations were taken from actual news events and published stories. For instance, the revelation that actor Rock Hudson and other celebrities died of AIDS spawned a statement about the newsworthiness of reporting AIDS as cause of death in the obituaries of well-known figures.[23]

Similarly, "outing" reports about businessman Malcolm Forbes, Representative Gary Studds, Terry Dolan and others were reflected in other questions about the ethics of covering public outings of politicians and public figures, and in questions regarding the circumstances under which reporting on sexual orientation is newsworthy.

The sample of 450 senior editors for this study was drawn from a list of the nation's 1,575 daily newspapers, a list arranged in descending order of circulation. This list, provided by Editor and Publisher, was divided into ten segments, with each segment representing approximately ten percent of the total daily newspaper circulation in the United States. Forty-five managing editors, associate editors, city or metro editors, and news editors were selected from the dailies included in each segment of the list. The actual names of the senior editors included in the sample were selected from the 1989 Editor and Publisher International Yearbook. The resulting sample included senior editors who perform a range of editorial and managerial functions and reflects the circulation and geographical diversity of the country's daily newspapers. Those papers with large circulations obviously contributed more than one senior editor to the sample. For those segments from the list containing many dailies with small circulations, only one senior editor was selected from several newspapers.

Each of the 450 senior editors selected for the sample were sent a letter in February, 1991, requesting their participation and explaining that they would be receiving a telephone call from an interviewer in the next few weeks. By mid-May, student interviewers from the Bush Research Center at Ohio University's E.W. Scripps School of Journalism had completed telephone surveys with 227 senior editors.[24]

Arranging a convenient time in these busy editors' schedules for the interviews was difficult; but, once scheduling difficulties were overcome, agreement to participate ran more than 90 percent. The preliminary results presented here are based on 227 completed surveys conducted between February 28 and May 10, 1991.

Findings

Editors surveyed seemed to believe that one's status as a public figure or private citizen helped determine if the reporting of sexual orientation was newsworthy. Editors were more inclined to run AIDS as the cause of death in obituaries in the case of celebrities and public figures and rely on preferences of the deceased's family in the case of private citizens.

The same held true for publication of sexual orientation. Editors tended to think that publishing the sexual orientation of public figures is generally not an invasion of their privacy and that reporting the outing of a public figure or of a person who has sought publicity is newsworthy. Generally editors felt that the person's public status makes him or her a legitimate subject of investigation.

Obituaries

When asked, "When AIDS is known to be the cause of death, does your newspaper report this in non-paid obituaries?," 15.6 percent said "always," 27.6 percent said "usually," 25.8 percent said "rarely," 24.9 percent said "never," and 6.2 percent did not know. Similarly, most editors said their newspaper does not "follow up by contacting the physician or member of the family...when AIDS is suspected to be the cause of death." Of those responding, 13.7 percent always follow up, 15 percent usually do, 24.3 percent rarely do, 39.4 percent never do, and 7.5 percent did not know.

While fewer than half of the editors said they publish AIDS as the cause of death in non-paid obituaries, most agreed with this statement: "In AIDS and AIDS-related deaths, principles of fair and accurate reporting require that obituaries and stories list the cause of death whenever possible." Of those responding, 32 percent strongly agreed, 32.9 percent agreed somewhat, 28.4 percent disagreed somewhat, and 6.7 percent strongly disagreed.

Editors indicated, however, that several factors enter into their decision to list lovers, domestic partners, or longtime companions as survivors in the obituaries of gays and lesbians. For example, 68 percent of respondents strongly agreed with the statement, "Obituaries for gays and lesbians should include the name of a longtime lover or domestic partner among survivors if the family of the deceased requests it or if the deceased leaves instructions requesting it." Of the remainder, 24 percent agreed somewhat with the statement, 5.3 percent disagreed somewhat, and 2.7 percent strongly disagreed.

Editors' views changed slightly when they were asked if longtime companions of gays and lesbians should be listed in obituaries "if the deceased's lover requests it." In this case, the majority agreed, but by a narrower margin. Only 33.3 percent strongly agreed with the statement, 40 agreed somewhat, 20 percent disagreed somewhat, and 6.7 percent strongly disagreed.

This is in keeping with views of editors that apparently family requests should be honored in the case of obituaries. When asked, "Newspapers should honor family requests (in AIDS and AIDS-related deaths) that the cause of death be omitted in obituaries and stories," 30 percent strongly agreed and 35.4 percent agreed somewhat. Of those who disagreed, 24.2 disagreed somewhat, and 10.3 percent strongly disagreed.

Editors also indicated that the status of the subject of a story might influence how that subject is treated in obituaries. When asked, "In AIDS and AIDS related deaths, obituaries and stories should report the cause of death if the deceased was well-known or a public figure," about 84 percent agreed with the statement. Of those surveyed, 34.7 percent strongly agreed, 49.5 agreed somewhat, 12.2 percent disagreed somewhat, and 3.6 percent strongly disagreed.

Editors also believe political beliefs or activities of the deceased should influence whether cause of death is reported. When asked, "In AIDS and AIDS-related deaths, obituaries and stories should report the cause of death if the deceased took an active stand against legislation advocated by gays and lesbians," 31.5 percent strongly agreed, 44.6 percent agreed somewhat, 18.9 percent disagreed somewhat, and 5 percent strongly disagreed.

Despite their reticence about including AIDS as the cause of death in all circumstances, editors were reluctant to accept the notion that AIDS-related death carries a stigma, nor did they indicate much interest in establishing a policy about such issues. When asked, "In AIDS and AIDS-related deaths, obituaries should omit the cause of death because AIDS carries a stigma not associated with other diseases," only 5.4 percent strongly agreed, 13.5 percent agreed somewhat, 48.4 percent disagreed somewhat, and 32.7 percent strongly disagreed.

Also, the majority of editors indicated they would consider on a case-by-case basis, reporting about AIDS in obituaries, rather than establish a policy. When asked, "In AIDS and AIDS-related deaths, decisions about reporting cause of death in obituaries should be made on a case-by-case basis, 46 percent agreed strongly, 31 percent agreed somewhat, 13.7 percent disagreed somewhat, and 9.3 percent strongly disagreed.

Reporting of Outings and Sexual Orientation.

While the majority of editors surveyed had little or no experience supervising the coverage of outings, they indicated they do not perceive publishing the sexual orientation of public figures as an invasion of privacy. Nearly three-fourths of the editors disagreed with the statement, "Publishing the sexual orientation of public figures is an unwarranted invasion of their privacy, no matter what the circumstances." Only 8.4 percent strongly agreed with that statement, 18.1 percent agreed somewhat, 48.7 percent disagreed somewhat, and 24.8 percent strongly disagreed.

Further, editors indicated they consider newsworthy the attempts to publicly "out" a political candidate. When asked their opinion of the statement, "A demonstration by gays and lesbians at the office or home of a political candidate they are attempting to "out" is newsworthy and deserving of coverage," 11.8 percent strongly agreed, 54.1 percent agreed somewhat, 27.3 percent disagreed somewhat, and 6.8 percent disagreed strongly.

Still, editors did not think that newspapers always have the right to publish sexual preferences of public figures. They were asked their opinion of the following statement: "When people seek publicity and status as public figures, their sexual preferences become a legitimate subject for investigation and publication." Only 5.3 percent strongly agreed, 37.3 percent agreed somewhat, 37.3 percent disagreed somewhat, and 20 percent strongly disagreed.

While most of the editors surveyed had little firsthand experience covering local outings, they indicated they did publish stories about national outings--stories that probably came over news wires.

When asked, "Has your newspaper reported on demonstrations by gays and lesbians intended to 'out' local politicians or public figures?," only 13.7 percent said yes, while 74.8 percent said no. The remaining 11.5 percent did not know. When asked if their newspapers investigated the outings of local politicians or public figures, only 11.1 percent said yes, while 81.4 percent said no and 7.5 percent did not know.

Editors did not seem reluctant, however, to report outings of national figures. When asked if their newspaper reported on the outings of national politicians or public figures, 63.9 percent said yes, 23.8 percent said no, and 12.3 percent did not know. Only 7.9 percent of the editors surveyed said their newspaper had a policy regarding coverage of outings, while 84.6 percent said they did not, and 7.5 percent did not know.

Although two-thirds of the editors said their newspapers reported on the outings of national figures, editors indicated that activities of competing media would have little effect on their decision to cover outings. More than half disagreed with the statement, "Not reporting an outing of a public figure, when competing media do, would lose my newspaper credibility with its readers." Of those responding, 5 percent strongly agreed, 30.6 percent agreed somewhat, 46.8 percent disagreed somewhat, and 17.6 percent strongly disagreed.

Discussion

While it is difficult to draw from a single exploratory study perceptions of editors on any single issue, this study indicated that senior newspaper editors may not be able to reconcile their views of "ideal" coverage of gays and lesbians with what actually appears in their newspapers. There seems to be considerable uncertainty about how to cover issues of concern to gays and lesbians in a way that reflects editors' notions of fairness and accuracy.

Editors also seem to be ambivalent about establishing guidelines for such coverage. For instance, they seem to believe that one of the missions of their newspapers, and one of the concepts of accurate reporting, is to list cause of death in non-paid obituaries and stories; yet the majority do not list it in the case of AIDS, particularly if the deceased is a private citizen and not a public figure or celebrity. According to editors, the practice of most newspapers frequently is to honor the wishes of the family when listing survivors and cause of death--a practice that, indirectly, could lead readers to underestimate the number of people who die from AIDS, refueling a decade-old argument by some gay leaders that the public is unaware of the actual impact of the AIDS epidemic. Editors indicate, also, that the rules might change when public figures die of AIDS. In those cases, many editors said all is fair and AIDS should be listed as cause of death.

Editors spelled out their aversion to setting guidelines for obituaries of people with AIDS by indicating strongly that each decision should be made on a case-by-case basis. Yet they may not be aware of the inconsistencies fostered by such a lack of policy.

These conflicting views were seen in a more limited way in editors' responses to questions about coverage of outings. More than three-fourths of the editors surveyed had little or no firsthand experience supervising coverage of outings, and, consequently, reported on few if any local outings. Nearly two-thirds of the editors surveyed, however, said their newspapers reported on national outings, apparently from material they received from wire services. While most editors said that activities of competing media would not influence their coverage of outings, editors are aware that wire stories are available to other media, and may want to avoid questions from readers who want to know why information they see in news weeklies, for instance, is not available in their daily newspaper.

Certainly it would be impossible for the content of any newspaper to reflect ideal principles of journalism at all times. This survey points to the possibility that editors are grappling with their own views of what is fair and complete reporting of issues of concern to lesbians and gays. It also offers a glimpse into how their judgment eventually shapes readers' perceptions of gays and lesbians.

Appendix

Table 1
Newspaper Practice in Reporting AIDS-Related Deaths in Non-paid Obituaries
(in percent)

	Always	Usually	Rarely	Never	Don't Know
When AIDS is known to be the cause of death, does your newspaper report this in non-paid obituaries?	15.6	27.6	25.6	24.9	6.2
When AIDS is suspected to be the cause of death, does your newspaper follow up by contacting the physician or a member of the family?	13.7	15	24.3	39.4	7.5

Table 2
Editor Views on Reporting Aids in Obituaries
(in percent)

	Strongly Agree	Agree Somewhat	Disagree Somewhat	Strongly Disagree
In AIDS and AIDS-related deaths, principles of fair and accurate reporting require that obituaries and stories list the cause of death whenever possible.	32	32.9	28.4	6.7
Obituaries for gays and lesbians should include the name of a long-time lover or domestic partner among survivors if the family of the deceased requests it or if the deceased leaves instructions requesting it.	68	24	5.3	2.7
Obituaries for gays and lesbians should include the name of a long-time lover or domestic partner among survivors if the deceased's lover requests it.	33.3	40	20	6.7
In AIDS and AIDS-related deaths, newspapers should honor family requests that the cause of death be omitted in obituaries and stories.	30	35.4	24.2	10.3
In AIDS and AIDS-related deaths, obituaries and stories should report the cause of death if the deceased was well-known or a public figure.	34.7	49.5	12.2	3.6
In AIDS and AIDS-related deaths, obituaries and stories should report the cause of death if the deceased took an active stand against legislation advocated by gays and lesbians.	31.5	44.6	18.9	5
In AIDS and AIDS-related deaths, obituaries and stories should omit the cause of death because AIDS carries a stigma not associated with other diseases.	5.4	13.5	48.4	32.7
In AIDS and AIDS-related deaths, decisions about reporting cause of death in obituaries and stories should be made on a case-by-case basis.	46	31	13.7	9.3

Table 3
Editor Views on Revealing Sexual Preference
(in percent)

	Strongly Agree	Agree Somewhat	Disagree Somewhat	Strongly Disagree
Publishing the sexual orientation of public figures is an unwarranted invasion of their privacy, no matter what the circumstances.	8.4	18.1	48.7	24.8
A demonstration by gays and lesbians at the office or home of a political candidate they are attempting to "out" is newsworthy and deserving of coverage.	11.8	54.1	27.3	6.8
When people seek publicity and status as public figures, their sexual preferences become a legitimate subject for investigation and publication.	5.3	37.3	37.3	20
Not reporting an "outing" of a public figure, when competing media do, would lose my newspaper credibility with its readers.	5.0	30.6	46.6	17.8

Table 4
Newspaper Practice in Reporting on Outings
(in percent)

	Yes	No	Don't Know
Has your newspaper reported on demonstrations by gays and lesbians intended to "out" local politicians or public figures.	13.7	74.8	11.5
Has your newspaper reported "outings" of national politicians or public figures.	63.9	23.8	12.3

Notes

1. This study was supported in part with funding from the Bush Research Center, Ohio University, Guido H. Stempel, III, director.

2.Special issues of Newspaper Research Journal and Journalism Quarterly recently have been devoted to studies of interest to minorities and women. See Newspaper Research Journal, 11:3, and Journalism Quarterly, 63:3.

3. Larry Gross, "Out of the Mainstream: Sexual Minorities in the Mass Media," in Ellen Seiter, Hans Borchers, Gabriele Kreutzner and Eva-Marie Warth, Remote Control: Television Audiences and Cultural Power (New York: Routledge, 1989), p. 132.

4. Gross, op. cit., p. 138.

5. Gross, op. cit., pp. 136-137. See also Max Navarre, "Fighting the Victim Label," in Douglas Crimp, AIDS: Cultural Analysis, Cultural, Cultural Activism (Cambridge, Mass.: MIT Press, 1988), pp. 143- 147.

6. This is a common criticism of media coverage of AIDS, but it is outlined specifically in Randy Shilts' And the Band Played On: Politics, People and the AIDS Epidemic (New York: St. Martin's Press, 1987). The sensational aspects of coverage are examined in Simon Watney, Policing Desire: Pornography, AIDS and the Media (Minneapolis: University of Minneapolis Press, 1987), pp. 77-97.

7. James Kinsella discusses this in depth in Covering the Plague (New Brunswick, N.J.: Rutgers University Press, 1989), pp. 63-86. For a more limited discussion see Steven Kladiman and Tom Beauchamp, The Virtuous Journalist (Oxford: Oxford University Press, 1987), pp. 147-153.

8. Ransdell Pierson, "Uptight about Gay News," Columbia Journalism Review, March/April 1982, pp. 25-33.

9. American Society of Newspaper Editors, Alternatives: Gays & Lesbians in the Newsroom (Washington: Human Resource Committee Report, 1990), pp. 25-26.

10. Shilts, op. cit., pp. 472-473.

11. Shilts, op. cit., pp. 178.

12. The importance and function of newspaper obituaries is discussed by editors in Bernard Caughey, "The Popularity of Obituaries," Editor & Publisher, April 23, 1988, pp. 46, 146.

13. See David Gelman, "Outing: An Unexpected Assault on Sexual Privacy," Newsweek, April 30, 1990, p. 66.

14. Gelman, op. cit.

15. Shilts, op. cit.

16. Kinsella, op. cit.

17. See Douglas Feldman and Thomas Johnson, The Social Dimension of AIDS: Method and Theory (New York: Praeger, 1986), and Sandra Panem, The AIDS Bureaucracy (Cambridge, Mass.: Harvard University Press, 1988); and Edward Albert, "Acquired Immune Deficiency Syndrome: The Victim and the Press," Studies in Communication 3:135-138 (1986).

18. Gross, op. cit., p. 132.

19. David C. Colby and Timothy Cook, "The Mass Mediated Epidemic: AIDS on the Nightly News Network News, 1981-1987," forthcoming in Elizabeth Fee and Daniel Fox, AIDS: Contemporary History (Berkeley, Calif.: University of Calfornia Press, 1991).

20. Carolyn Stroman and Richard Selitzer, "Mass Media Use and Knowledge of AIDS," Journalism Quarterly 66:881-887 (1989).

21. Timothy Cook, "Setting the Record Straight: The Construction of Homosexuality on Television News," unpublished paper presented to the Lesbian and Gay Studies Center at Yale University, New Haven, Conn., October 1989.

22. American Society of Newspaper Editors, op. cit.

23. The issue of privacy and sexual orientation has been discussed at length in the popular press and in journalism trade publications. See, for example, Beth Ann Krier, "Whose Sex Secret is It?" Los Angeles Times, March 22, 1990, p. E-2; Edward Iwata, "Privacy and the Press," Editor & Publisher, December 15, 1990, pp. 20-21; Mitchell Hartman, "When to Say Someone is Gay," Quill, November/December 1990, pp. 6-7.

24. This is an ongoing study and interviews are continuing.

TESTING TRUISMS ABOUT SCIENCE AND THE MASS MEDIA: THE CASE OF COLD FUSION

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by

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ABSTRACT

TESTING TRUISMS ABOUT SCIENCE AND THE MASS MEDIA: THE CASE OF COLD FUSION

This paper examines eight "truisms" about science and the mass media, dealing with accuracy, completeness, balance, comprehensiveness, relevance, sensationalism, accessibility, and source of problems. The paper compares "street" versions of the truisms to research about the issues, and tests the 1989 coverage of cold fusion against the truisms. The article concludes that cold fusion stories generally fit the model of other types of science coverage, and that neither the "street" nor "research-based" truisms are as clearcut as often portrayed.

simply to create some benchmark measures of how cold fusion coverage compares with other coverage of science news.

The data in this paper comes from the Cornell Cold Fusion Archive (CCFA), which was funded by the National Science Foundation to create a record of cold fusion for historians and sociologists of the future. The archive contains:

- More than 1000 media clips (both print and electronic) about cold fusion;
- Traditional historical manuscript material, including scientific notes and logbooks, correspondence, memos, preprints, etc.;
- More than 50 taped interviews with protagonists in the cold fusion saga, including researchers, research administrators, public information specialists, and journalists;
- The equivalent of 15,000-20,000 pages of data taken from electronic bulletin boards and electronic mail files created on computer networks
- A number of items of material culture, including do-it-yourself kits, t-shirts, and gag items related to cold fusion.

The archive has been deposited in the Cornell University library, and a finding aid is available.[3] This paper is based largely on the media clips portion of the archive, but does draw on other material as well.

I. THE HISTORY OF COLD FUSION

The first published information directly related to cold fusion was published in 1926. A few papers on topics fundamental to cold fusion were published in the 1940s and 1950s, and serious research on the topic began in the late 1970s.[4]

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[3] For more information, contact Ms. Elaine Engst, Department of Manuscripts and University Archives, Olin Library, Cornell University, Ithaca, NY 14853. A finding aid to the archive is available; the current cost is $10.00.

[4] This information and the material that follows are based on materials in the CCFA. For more detailed information and citations on the history of cold fusion, see Bruce V. Lewenstein and Wolfgang Baur, "A Cold Fusion Chronology," Journal of Radioanalytical Chemistry, 1991, 152:273-

TESTING TRUISMS ABOUT SCIENCE AND THE MASS MEDIA: THE CASE OF COLD FUSION

It's been two years since cold fusion--the claim that nuclear fusion could be created at room temperature in simple laboratory apparatus--burst upon the media world in March of 1989. For about two months, stories about cold fusion appeared almost daily in newspapers, magazines, and television broadcasts around the country and the world. Since then, coverage has been more muted, though the topic reappears sporadically.[1]

From the day cold fusion was announced through a press conference, featured on the front pages of two of the world's most prominent financial newspapers, and led the CBS evening news, the relationship between science and the media has been as much a part of the debate on cold fusion as has been the science itself. Two recent books on cold fusion each contain a section devoted to the media.[2]

This paper uses several types of evidence about media coverage of cold fusion to examine the broader question of what we know in general about science and the media. It takes as its guiding theme a list of "truisms" about science and the media, both the "street truisms" used by people who haven't examined the research literature and the modified truisms produced by researchers. The paper is not intended to present major theoretical or conceptual issues, but

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[1] A checklist of media articles on cold fusion, showing dates, titles, authors, and publications, is the "Print News--Index" folder, Cornell Cold Fusion Archive, Ithaca, NY. Additional information on the archive is provided later in this paper.

[2] Frank Close, Too Hot to Handle: The Race for Cold Fusion (London: W.H. Allen, 1991; Princeton: Princeton Univ. Press, 1991), pp. 330-336; Eugene Mallove, Fire From Ice: Searching for the Truth Behind the Cold Fusion Furor (New York: Wiley, 1991), pp 263-276.

After about two months, most researchers had concluded that cold fusion--at least, the type of cold fusion proposed by Pons and Fleischmann--was not a real phenomenon. However, a few hundred researchers around the world continued to pursue cold fusion, and meetings devoted to the subject have continued for the past two years (Fig. 1). As this paper is written, in March 1991, yet another meeting devoted to cold fusion has been scheduled for mid-June in Italy.

Throughout the development of cold fusion, the media has been intimately involved in the story. The original announcement came in a widely-reported press conference (Dan Rather led the CBS evening news with the story), and newspapers were filled with the latest rumors, confirmations, and dismissals. But once widespread active interest in cold fusion died out, so too did media coverage (Fig. 2).

II. TRUISMS ABOUT SCIENCE IN THE MASS MEDIA

To analyze science in the mass media, one must consider some "truisms," which come in two varieties: (1) what "people" (whatever poorly-defined group of people one wishes to refer to) say about science in the mass media, and (2) what the research literature says about science in the mass media. We shall first list the truisms (Fig. 3), modifying the "street" truisms by what the research literature shows. Then we will report how well the cold fusion coverage matches those truisms.

Before we proceed, however, we would like to comment on the value of truisms as an analytical tool. Because science journalism, and the related issue of public understanding of science, is a topic that concerns many scientists, many commentaries on science journalism have appeared in editorials, columns, book-length diatribes, speeches, and other documents produced by scientists. To the best of our knowledge, no attempt has been made in the past to compile a systematic list of the complaints about science journalism that appear in these commentaries.

A new approach to cold fusion was developed in the mid- to late-1980s by two teams working independently in Utah. The first team, led by Steven Jones at Brigham Young University, had been one of the leaders in earlier cold fusion work (known as "muon-catalyzed fusion"). By early in 1989, Jones was ready to begin making scientific presentations about the evidence he found for a new type of "piezonuclear fusion." Although Jones was convinced that fusion took place, he did not believe that useful energy could be produced by this new form of fusion.

The second, and now more famous, team consisted of Stanley Pons and Martin Fleischmann. Pons was chairman of the chemistry department at the University of Utah and Fleischmann, one of the world's most prominent electrochemists, was a research professor at Southampton University in England. Pons and Fleischmann had for several years believed that they could create useful energy through an electrochemical cell, energy that could only be explained by nuclear fusion.

The two research teams discovered each other's existence late in 1988. Because of a complex--and still contested--set of personal, scientific, and legal interactions between the two teams, Pons and Fleischmann held a press conference on 23 March 1989 to announce their discovery.

The scientific world went wild, and for about six weeks to two months research teams around the world attempted to replicate cold fusion. Unfortunately, Pons and Fleischmann had not yet published a formal paper on their research (though they did have a preliminary note in press at the time of the public announcement), and their public statements were both incomplete and contradictory. Though Jones was more forthcoming with details of his experiments, he was also less bold in his claims.

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298 (in press). Two recent books are Close, Too Hot to Handle, 1991, and Mallove, Fire from Ice, 1991. Science journalist Gary Taubes is writing a book on cold fusion, to be published by Random House.

inaccurate.[8] Studies in a variety of contexts, using a variety of methods, have repeatedly shown this over the past 40 years.

B. Completeness

However, studies on accuracy have often shown that complaints about accuracy are often complaints about completeness. Many scientists complain that science journalism doesn't provide enough details for them to understand the science of what's happening.[9] The research literature supports the complaint. The major problems of science journalism are those of omission rather than commission. The names of investigators get left out, experimental details get left out, and so on.[10]

C. Balance

The third truism deals with "balance." The "street" truism is that science journalism is rarely balanced, with critics of science or some piece of science getting much more attention than responsible scientists.[11] Every time the gadfly Jeremy Rifkin gets quoted, many scientists just roll their eyes and give up on science journalism. To them, Rifkin is a "crazy."

The problem with this truism is one of definition. To a scientist, "balance" means logical analysis of the evidence and rejection of the unsupported position. To the journalist, "balance"

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[8] Susan Cray Borman, "Communication Accuracy in Magazine Science Reporting," Journalism Quarterly, Summer 1978, 55:345-346; Sharon Dunwoody, "A Question of Accuracy," IEEE Transactions on Professional Communication, December 1982, PC-25:196-199; D. L. Pulford, "Follow-up Study of Science News Accuracy," Journalism Quarterly, Spring 1976, 53:119-121; Phillip J. Tichenor et al., "Mass Communication Systems and Communication Accuracy in Science News Reporting," Journalism Quarterly, Winter 1970, 47:673-683.

[9] Dunwoody, "A Question of Accuracy," 1982.

[10] Borman, "Communication Accuracy," 1978; James W. Tankard and Michael Ryan, "News Source Perceptions of Accuracy of Science Coverage," Journalism Quarterly, Summer 1974, 51:219-225; Hillier Krieghbaum, Science and the Mass Media (New York: New York Univ. Press, 1967), p. 39.

[11] See, for just a single example, "TV Talks Back," SIPIScope, 17(2):20-26.

That is not to say that a great deal of research on science journalism has not been done. Clearly it has been, and this paper draws a great deal from that research.[5] But while there has been some overlap between the complaints made by scientists and the areas of research undertaken by science journalism scholars, and while there have been many attempts by scientists and journalists to bridge the gap that is perceived to divide them, we do not believe there has been any comprehensive, documented comparison of the separate sets of beliefs of commentators and scholars.[6] The use of "truisms" is an attempt to construct that kind of comparison.

As such, the truisms are not likely to coincide with theoretical and conceptual issues in journalism or mass communication research. It is our hope, however, that they may be of some use by those scholars and commentators interested in furthering, rather than merely repeating, the debate between scientists and journalists.

With that cautionary proviso about the intellectual status of the truisms, let us proceed.

A. Accuracy

The non-research truism, which comes largely from scientists, is that science journalism is riddled with errors.[7] In fact, however, the research literature shows that science stories are rarely

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[5] For an introduction to the literature, see Sharon Dunwoody and Marshel Rossow, Science Writing: An Annotated Bibliography of Commentary, Research, and Resources (Greenlawn, NY: Council for the Advancement of Science Writing, 1988).

[6] For examples of meetings devoted to bridging the gap, see Patricia L. Alberger and Virginia L. Carter, eds., Communicating University Research (Washington: Council for the Advancement and Support of Education, 1981; rev. ed., 1985); Sharon L. Friedman, Sharon Dunwoody, and Carol L. Rogers, eds., Scientists and Journalists: Reporting Science as News (New York: Free Press, 1986); and Council of Scientific Society Presidents, Bridging the Communications Gap: A Wingspread Conference on Strengthening Relationships Between Scientists and Journalists. (Proceedings of a workshop, 11-13 May 1990.)

[7] Edward J. Burger, Health Risks: The Challenge of Informing the Public (Washington: The Media Institute, 1984).

However, there is a research-based truism about comprehensiveness. Several studies have shown that stories about science tend to be "fragmented," to provide just bits and pieces of science without good context.[15] This often shows up in a focus on "the news," without much emphasis on the continuing process of science or scientific development.[16]

E. What subjects get covered

The next truism argues that medical subjects are covered too much, and other areas of science too little, given their relative importance. Especially among physical scientists, there is a general feeling that medicine gets too much coverage.[17]

Again, the truism arises because of different definitions, or at least perspectives. Materials scientists, to take just a single example at random, may believe that the importance of their field is being slighted in favor of yet another "trivial" piece of biomedical research that moves the cancer juggernaut one iota of a milli-fraction of a minute step forward.

But the journalist uses a different definition of the "news." Many of the best journalists, including science journalists, believe that the best stories are those that affect people. So stories about medicine and health should be the most popular. Stories about solutions to the energy crisis should also be popular, but stories about basic research will be less popular.

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[15] John Burnham, How Superstition Won and Science Lost: Popularizing Science and Health in the United States (New Brunswick, N.J.: Rutgers Univ. Press, 1987).

[16] Krieghbaum, Science and the Mass Media, 1967, p. 61; The Media Institute, Television Evening News Covers Nuclear Energy (Washington: The Media Institute, 1979); Nancy Pfund and Laura Hofstadter, "Biomedical Innovation and the Press," Journal of Communication, Spring 1981, 31:138-154; Vicki S. Freimuth et al., "Covering Cancer: Newspapers and the Public Interest," Journal of Communication, Winter 1984, 34:62-73; Rachel S. Greenberg, Vicki S. Freimuth, and Elaine Bratick, "A Content-Analytic Study of Daily Newspaper Coverage of Cancer," in Dan Nimmo, ed., Communication Yearbook 3 (New Brunswick, N.J.: Transaction Books, 1979), pp. 645-654; Connie M. Kristiansen and Christina M. Harding, "Mobilization of Health Behavior by the Press in Britain," Journalism Quarterly, Summer 1984, 61:364-370, 398; David M. Rubin and Val Hendy, "Swine Influenza and the News Media," Annals of Internal Medicine, 6 December 1977, 87:769-774; Peter M. Sandman et al., Environmental Risk and the Press (New Brunswick, N.J.: Transaction Books, 1988).

[17] Council of Scientific Society Presidents, Bridging the Communications Gap, 1990.

means that both (or all) of the sides in a controversy have been covered.

Most of the research has used the journalistic, "on the one hand, on the other hand" definition of balance. And the evidence is that science journalism is balanced; it provides full opportunities for all sides of a dispute to present their case.[12]

Using the first definition, of "scientific" balance, the evidence is less clear. Several studies have suggested that journalists tend to focus on one part of a story at once, then go on to another part of the story. Though the total coverage over time may be "balanced," the tenor at any one time is clearly not balanced.[13]

So perhaps the truism is both true and false: from a journalist's perspective, the coverage is largely balanced, but from a scientist's point of view, it's definitely warped.[14]

D. Comprehensiveness

The journalistic approach to balance raises the issue of comprehensiveness. How good is the press at covering all of a story? That is, not all the details, but all of the angles: the science, the politics, the institutional context, and so on.

There does not seem to be a "street" truism here. First of all, many scientists (and even many science journalists) might not agree that all those angles belong in stories about science. And second, even if people did agree on what was appropriate, it is not clear that they would agree on what actually happens.

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[12] Mitchell Stephens and Nadyne G. Edison, "News Media Coverage of Issues During the Accident at Three Mile Island," Journalism Quarterly, Summer 1982, 59:199-204, 259; Sharon Friedman, Carole Gorney, and Brenda Egolf, "Nuclear Bashing in Chernobyl Coverage: Fact or Fiction?" paper presented to Association for Education in Journalism and Mass Communication, Washington, D.C., 1989.

[13] Rae Goodell, "How to Kill a Controversy: The Case of Recombinant DNA," in Sharon M. Friedman, Sharon Dunwoody, and Carol L. Rogers, eds., Scientists and Journalists: Reporting Science as News (New York: Free Press, 1986), pp. 170-181; Dorothy Nelkin, Selling Science: How the Press Covers Science and Technology (New York: W. H. Freeman, 1987).

[14] The ambiguity in this truism suggests that future analyses should attempt some different characterization of the problem.

the use of analogies, metaphors, and examples, while making stories easier to read, doesn't help in getting across more information.[21]

Too many newspapers, magazines, and even commercial television stations run science stories, and get feedback telling them that their readers want more, for us to believe that the science that does appear in the mass media is too complex for most people. Thus the truism does not seem to be true.[22]

H. Who's to blame?

The final truism is that all of the problems with science in the mass media can be traced to poorly-trained, lazy, probably stupid science journalists.[23]

Actually, that's only if you ask the scientists. If you ask the journalists, you'll find them saying that all the problems are the fault of the elitist, jargon-laden, hypocritical scientists who take public money and then refuse to spend time being accountable to the public.[24]

It turns out that the researchers can't agree either. One historian says that the journalists are at fault for emphasizing "facts" over context.[25] Another researcher, looking particularly at the

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[21] Lloyd R. Bostian, "How Active, Passive, and Nominal Styles Affect Readability of Science Writing," Journalism Quarterly, Winter 1983, 60:635-640, 670; G. Ray Funkhouser, "Levels of Science Writing in Public Information Sources," Journalism Quarterly, Winter 1969, 46:721-726; James E. Grunig, "Three Stopping Experiments on the Communication of Science," Journalism Quarterly, Autumn 1974, 51:387-399; A. Hunsaker, "Enjoyment and Information Gain in Science Articles," Journalism Quarterly, Autumn 1979, 56:617-619; Jocelyn Steinke, "Attracting and Sustaining the Interest of Prospective Readers: The Use of Creativity in Science Writing," master's thesis, Cornell Univ., 1988.

[22] As with some of the other truisms, however, the ambiguity of the evidence suggests that the question should be reframed to make it more productive for future researchers.

[23] Dixy Lee Ray, "Who's To Blame When the Public Misunderstands Science," The Scientist, 16 April 1990, pp. 17, 19.

[24] "Public Knowledge," NewScientist, 2 March 1991, 129(1758):9.

[25] Burnham, How Superstition Won, 1987.

Again, research seems to support most of the truism. Surveys conducted in the 1950s and 1960s showed that the most popular stories were about medicine and public health, agricultural science, and atomic energy.[18] Recent surveys of news coverage have shown that issues like environmental accidents, pesticide problems, and so on, get much more coverage than AIDS and cocaine abuse--which makes sense, since those environmental issues affect so many more people.[19]

F. Sensationalism

What gets covered may not be as important as how it gets covered. And so the next truism: the press hypes everything.

Unfortunately for press critics, the research literature does not support this truism. Study after study has shown that science journalism is rarely considered "sensational" by the people--whether scientists or journalists -- who look at it carefully.[20]

G. Science writing is too complicated

Another common criticism--and thus truism--is that science writing is too complicated. Many people complain that since surveys show that only about 5 percent of the public can understand even simple scientific facts, science in the mass media is simply too complicated.

Again, the research data is much more complex. Essentially, it reports that the more difficult the writing (as measured by readability formulas, sentence length, word length, and so on), the more educated one has to be in order to get something out of the text. At the same time,

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[18] Krieghbaum, Science and the Mass Media, 1967, p. 78.

[19] "The Environment in the News," Chemoecology, 1989, 18(8):101.

[20] Kristiansen and Harding, "Mobilization of Health Behavior," 1984; Stephens and Edison, "News Media Coverage," 1982; Carroll Glynn and Albert R. Tims, "Sensationalism in Science Issues: A Case Study," Journalism Quarterly, Spring 1982, 59:126-131; Glynn, "Science Reporters and Their Editors Judge Sensationalism," Newspaper Research Journal, 1985, 6(3):69-74; Friedman, Gorney, and Egolf, "Nuclear Bashing," 1989.

A. Accuracy

The content analysis made no specific attempt to test accuracy. However, numerous commentaries about cold fusion coverage have appeared in articles, books, electronic mail messages, and interview transcripts in the CCFA. Interviews conducted specifically for the CCFA included a question about media accuracy.

In those commentaries, a few scientists have complained that they were misquoted on some particular point. But on the whole, the commentaries and interviews have suggested that most scientists found the articles they read accurate. In addition, our own reading of a tremendous volume of media coverage suggests that very few factual errors were committed--except when the sources themselves provided incorrect information (which can be seen when the same error or misinterpretation appears in independent stories produced by several writers).

So the cold fusion coverage tends to confirm the first truism, that science coverage is generally accurate. But this conclusion must be regarded as tentative, given the imprecise nature of our method.

B. Sin of omission

Many scientists, however, have expressed frustration that much information was missing from the stories they read. These alleged omissions were particularly troubling to scientists since little useful information about cold fusion had appeared in the "traditional" peer-reviewed scientific literature; the media provided the only source of information to researchers trying to replicate cold fusion experiments.

We found that about 60 percent of the stories dealt with some technical details (including theoretical issues). Indeed, this was the topic most commonly covered by the stories (Fig. 5). But the technical details certainly weren't covered in great detail. Part of that can be traced to the short, "event-centered" nature of many of the stories. And part of that can be traced to the scarcity of the details available even from Pons and Fleischmann.

case of the XYY chromosome, says that the scientists were at fault.[26] And sociologist Dorothy Nelkin blames them both.[27]

So, like so many of the truisms, this one appears to require reformulation to make it useful for researchers. Figure 4 lists the modified truisms.

III. THE CASE OF COLD FUSION

To test cold fusion against the truisms to cold fusion, we conducted a content analysis of 100 articles from the first six weeks of the controversy.[28]

First, some overall statistics.

(1) How big of a story was this? About one-third of the stories in our sample ran on p. 1 or p. 3, which in most papers are the main news holes.

(2) The story did not stay big. In the last week of March, the stories ran at the rate of 1.5 per day. Throughout April, the rate was about 2.5 per day. By May, even with a brief surge after major presentations on cold fusion at a May 1-2 meeting of the American Physical Society in Baltimore, the numbers drop to about 0.35 articles per day. And in June, the latest month for which we have detailed statistics, the numbers drop to less than 0.23 articles per day.

The key part of our analysis deals with the truisms.

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[26] Jeremy Green, "Media Sensationalisation and Science: The Case of the Criminal Chromosome," in Terry Shinn and Richard Whitley, eds., Expository Science: Forms and Functions of Popularisation (Dordrecht/Boston/Lancaster: D. Reidel, 1985), pp. 139-161.

[27] Nelkin, Selling Science, 1987.

[28] The articles were the first 100 collected for the CCFA through June 1989. (The CCFA currently has about 900 articles that appeared during this period.) Although this created a bias towards major national newspapers (about 35% of the sample came from the New York Times and the Wall Street Journal), more than 20 publications were in the sample. Five of the authors coded approximately 20 articles each. To determine intercoder reliability, 3 of the authors recoded 5 articles each that they had not originally coded. We calculated intercoder reliability by the formula (# of identical coding decisions)/(# of possible coding decisions). Intercoder reliability rates were 82%, 85%, and 87%.

C. Balance

The issue of "balance" is hard to discuss. Do we mean scientific balance, by which we mean that ideas are tested against logic and evidence, or journalistic balance, by which we mean that ideas are contrasted with other ideas? To put that another way: in the sciences, whether natural or social, one tries to reach consensus about what the state of nature is. In journalism, one tries to be sure that all opinions have been presented.

The content analysis produced two kinds of evidence: who got quoted in stories and whether the issue of "controversy" was mentioned.

By several measures, the stories as a whole were "balanced" in the sense of quoting several people who might be expected to have different opinions. Two categories measured this specifically: physicists vs. chemists (31% each); and Brigham Young University (BYU) vs. University of Utah (35% vs. 18%, but that's understandable given the way the story developed) (see Fig. 6).

Another way of characterizing the issue of balance is to look at how the media covered the very existence of a controversy--in this case, among scientists. Although only 10% of the stories mentioned controversy in the headlines, 17% mentioned controversy in the lead -- the same percentage as those that mentioned the concept of a "breakthrough" (Fig. 7).

So the journalists, in writing their stories, focused on the existence of an argument as much as they focused on the idea of breakthrough. Although it's true that if we aggregate all the other "content" categories, "controversy" comes out low on the list, it is important that as a single category it appeared so frequently.

Once again, this analysis lends evidence to the truism. The media coverage was balanced, journalistically, in the sense that it presented all sides. But by the very act of doing that, it may have undermined its presentation of whatever scientific consensus may have existed. For our sense, based on interviews, is that the true consensus was that many scientists were simply

And so we get into a very complex situation. The evidence suggests that the basic truism is right: the mass media covered the story accurately, except that it left out a lot of details. The question is: why were those details left out?

As the history of cold fusion has unfolded, it has appeared that the details were missing precisely because nobody knew them. In his recent book on cold fusion, theoretical physicist Frank Close devotes significant effort to demonstrating that even Pons and Fleischmann were unsure about what they were seeing and how to report their data.[29] Nobody knew how to prepare a palladium rod. Nobody knew exactly what mixture of salts to include in the solution. Nobody knew how large the cells should be.

And, indeed, part of the scientific controversy was over precisely those kinds of issues. For example, many scientists complained because they couldn't find out exactly the energies of the neutrons that Pons and Fleischmann were claiming to see. But that information may have been unclear, even to Pons and Fleischmann themselves. According to Elsevier, the publishers of the journal that the Pons and Fleischmann article finally came out in, one figure was altered at least two times during the production process.[30]

Now, most of the mass media probably wouldn't have reported the numbers from the figure anyway, as they were too detailed. But since scientists were relying, quite literally, on the mass media for their technical information, the sin of omission became critical. Thus the truism holds, and may have been even more important than usual in the cold fusion saga for the science-media relationship.

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[29] See especially Close's analysis of whether or not Pons and Fleischmann had performed a control experiment with ordinary water (Close, Too Hot to Handle, 1991, pp. 292-299).

[30] "Fast Track Publishing," ESP World, June 1989, pp. 3-5, on p. 3; see also Close's analysis of the gamma-ray spectrum problem (Close, Too Hot to Handle, 1991, pp. 161-171, 279-287).

energy crisis would be dramatically recast. And that issue did get mentioned explicitly in about a third of the articles, usually with a throwaway line to the effect that "This discovery, if true, could dramatically affect the world's energy crisis."

But, as Fig. 5 shows, the focus was on issues of technical detail, the controversy, and so on. That is, although energy concerns may have motivated the stories, the focus was not on issues that dramatically affected people. Rather, cold fusion was treated as a series of events, not as something with major implications.

On an anecdotal basis, one sees the same bias in stories that appeared nationally in the month after the Loma Prieta earthquake near San Francisco in October 1989. The emphasis was on the dramatic story, with much less on the relevance to people. Although Californians saw stories about the economic impact of both recovering from the quake and preparing for the next one, readers and viewers nationally saw dramatic rescues, the problems of particular commuters, and so on.

All of this merely confirms the well-known observation that an emphasis on events and dramatic stories is structural to journalism: if you report what's happening, that's a story; if you try to report what it means, you're beginning to impose opinions and get away from the concrete details on which the dominant ideology suggests that journalism is based.

So the truism that science journalism focuses on what's immediately relevant for people isn't quite true about cold fusion, except in a vague, overall sense. Energy is important, and so cold fusion stories were relevant. But the detail that most stories presented was not particularly relevant to most people.

It is possible--perhaps even probable--that the formulation of this truism is not well-conceived. If one looks at stories that are considered a priori to be relevant, one may find that they, too, focus on events, not on implications.

waiting to get some reliable evidence; they were skeptical but open. Thus the flip side of the truism, that scientific consensus may not have been presented, also seems to be true.

D. Comprehensiveness.

Did the media cover all the issues, all the context of the story?

Some stories in the New York Times and other papers did attempt to cover a lot of topics. But, as the list of the topics covered by the sample we analyzed suggests, a lot of issues got missed a lot of the time (Fig. 5).

Our sample was biased toward elite publications (about 35% of the sample came from the New York Times and the Wall Street Journal). When discussing the comprehensiveness of coverage, one must consider that most people in the country saw wire-service stories or television stories. It is true that Dan Rather used cold fusion as the lead story on the "CBS Evening News" on March 23, 1989. But the Vanderbilt television archives only show about ten stories total, for all networks, on cold fusion. The wire-service stories, even those abridged from major newspapers, tend to very event-oriented, reporting that day's news but very little of the scientific background or context.

Thus the truism holds: on a story with lots of events over the course of nearly two months, the media do not provide the background sense of flow. They're tied to the breaking story. The media provide "factoids" about science.

E. Focus on relevant issues

Cold fusion was clearly not a medical topic, and so one wouldn't expect it to be covered as thoroughly or widely as a personal health issue. But, given the constraints of the story, did journalists in this case focus on topics that concern people?

At one level, the coverage of cold fusion clearly supports the truism. The reason cold fusion was such a big story, at least initially, was because of its implications. If it were true, the world's worried, in fact, that the editor called the Journal's bureau in Los Angeles to find out how the Los Angeles Times had played the story. Both the editor and Bishop were relieved to find that the Los Angeles Times had made a big deal out of the story.

So: the story wasn't sensationalized, which fits the truism. And, in fact, in some cases it was actively played down.

G. Accessible to readers

The next truism deals with stories accessible to most readers. We did no analysis on the issue of readability. But our sense of the stories is that people who read them would have gathered some basic information about science. We noticed no particularly telling analogies or metaphors about the science of fusion itself. The theme of competition among research teams did come through, and that's a common-enough idea to have had some resonance with the public.

On the other hand, at least one scientist complained in an interview that he couldn't tell, from reading the mass media, exactly what the issues were in the science. That is, according to media reports, scientists seemed to have reduced the issues largely to ones of heat, neutrons, and tritium. This scientist asked, "Why those three? The media hasn't explained 'why' very well."

Thus the stories seem to have been reasonably accessible at the level at which they tried to convey information. But in a complaint related to the problems of omission and comprehensiveness, understanding may have been inhibited by the media's focus on events and "factoids."

H. Source of the problems

And finally there is the truism about who's to blame for any problems.

As hinted at above, the blame for any problems with the media coverage of cold fusion can be shared between the scientists and journalists.

F. Sensationalism

Was cold fusion coverage sensational?

Once again the evidence is mixed. On the one hand, the largest category in our "headlines" and "leads" section is clearly "breakthrough announced" (Fig. 7). On the other hand, "skepticism" or the neutral "experiment announced" total even higher (25% vs. 28%). Those three categories alone account for more than 50% of the total.

Thus the press neither wholeheartedly endorsed cold fusion, nor automatically rejected it. The generous interpretation would be to say that the journalists were just as skeptical as the scientists. The other perspective would be that probably far less than half of the scientific community believed in cold fusion, and so the numbers weren't representative.

But a deeper question is problem how scientists would like to see a story played versus how journalists would like to see it played--and the fact that even journalists disagree about how to play it.

An anecdote to support the previous point: Jerry Bishop, a distinguished science writer at the Wall Street Journal, was one of the reporters most deeply involved in covering cold fusion. His first article on cold fusion ran the day of the original press conference, and included speculation about what would be announced. Other reporters also had a day's jump on the story, but none of them pursued the story as Bishop did. Bishop had assumed that other reporters would report the story as soon as the University of Utah announced the coming press conference (the press release was embargoed until the time of the press conference)--that was part of why he went with his story before the formal announcement. So he was a little concerned that he had goofed when no one else ran a story on Thursday, the 23rd.

For Friday, Bishop wrote a long, front-page story for the Wall Street Journal. Again, he looked at his major competitor, the New York Times. No front page story. He finally found a story, buried deep inside the first section, in lower-left-gutter--about as bad a position as you can get in a newspaper. He was very worried now. What's more, his editor was very worried. So less-than-crystal-clear results. But we would argue that the fault is not in our analysis, but in the continuing concern on the part of both scientists and science journalism scholars on such traditional issues as accuracy, balance, comprehensiveness, etc. To us, the implication of our study is that researchers must turn to more contextual analyses of science journalism, moving away from concerns about what science journalism "is" or "ought to be," and towards a deeper understanding of the function of science journalism in the complex relationship between science and society.[31]

# # #

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[31] For works that begin to take this approach, see Shinn and Whitley, Expository Science, 1985; Sari Thomas, ed., "Science in Public [special issue]," Critical Studies in Mass Communication, March 1990, 7(1):1-79; and Stephen Hilgartner, "The Dominant View of Popularization: Conceptual Problems, Political Uses," Social Studies of Science, 1990, 20:519-539.

The journalists focused too much, for example, on physicists vs. chemists debates. There were, after all, prominent examples, such as MIT and Caltech, where interdisciplinary teams were working hard to try to understand what was happening. The media focused too much on the events of the day.

At the same time, it's clear from the comments that journalists reported from the ACS Dallas meeting and the APS Baltimore meeting that chemists were cheering at the possibility that they had shown up the physicists, and physicists were proud of how their rigor was destroying the chemical arguments.

The same things happens on the questions of accuracy and omission. Yes, the press left out a lot of material. But that was in part because the scientists didn't know a lot of information or were holding it back.

So the truism here is that, once again, there's plenty of room for sharing the blame.

III. CONCLUSION

Our conclusion is that cold fusion coverage was essentially ordinary, in that it reflected the truisms that research has led us to expect (with a few minor exceptions; see Fig. 8).

More important is what meaning we should take away from all this talk about truisms. The key point is that the interaction between the media and the scientific community was not a simple thing. On the one hand, the case of cold fusion does tend to support most of the truisms that we already had about how the press covers science. But on the other hand, and probably more important, the truisms themselves are not nearly as clearcut as many people would like to believe. The relationship between the press and the scientific community is an incredibly complex one, which we are just beginning to understand.

One referee of this paper criticized it, justifiably, for holding up cold fusion coverage "against a rather cracked mirror...so the implications of the findings are unclear." We agree that our attempt to create a list of truisms and to judge cold fusion against those truisms has led to

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THE COLD FUSION SAGA
1989-1990

23 Mar 89	Public announcement
10 Apr	Texas A&M confirms heat
11 Apr	ACS/Dallas meeting
26 Apr	Congressional hearings
1 May	APS/Baltimore meeting
23 May	Los Alamos meeting
13 Jul	Interim DOE (ERAB) report
15 Oct	NSF/EPRI panel
15 Nov	Final DOE (ERAB) report
29 Mar 90	First Annual NCFI Conference on Cold Fusion
15 Jun	Science charges fraud
22 Oct	BYU conference on Anomalous Nuclear Effects in Deuterium/Solid Systems

FIG. 1a

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Cold Fusion Nontechnical Publications

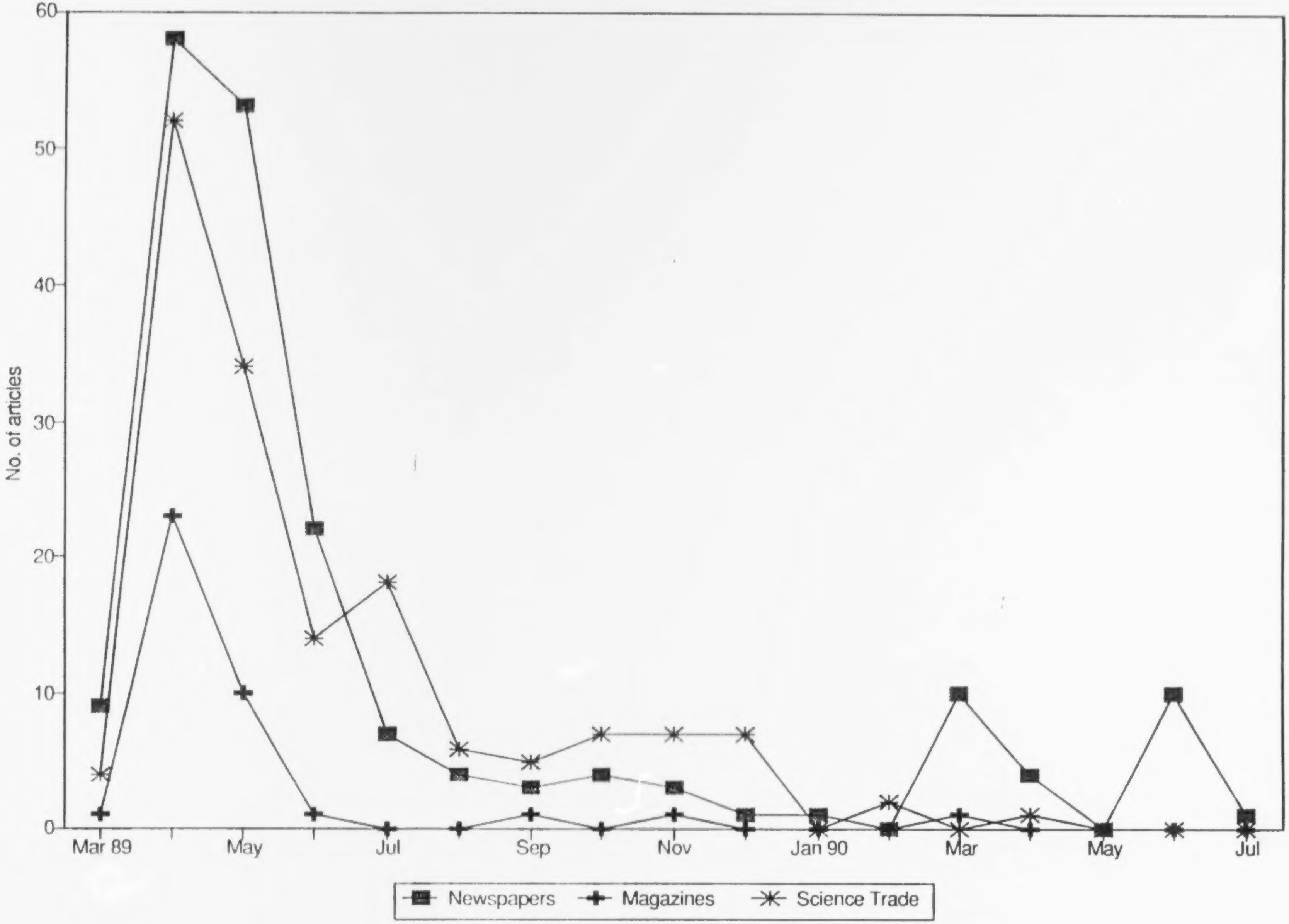


Fig. 2

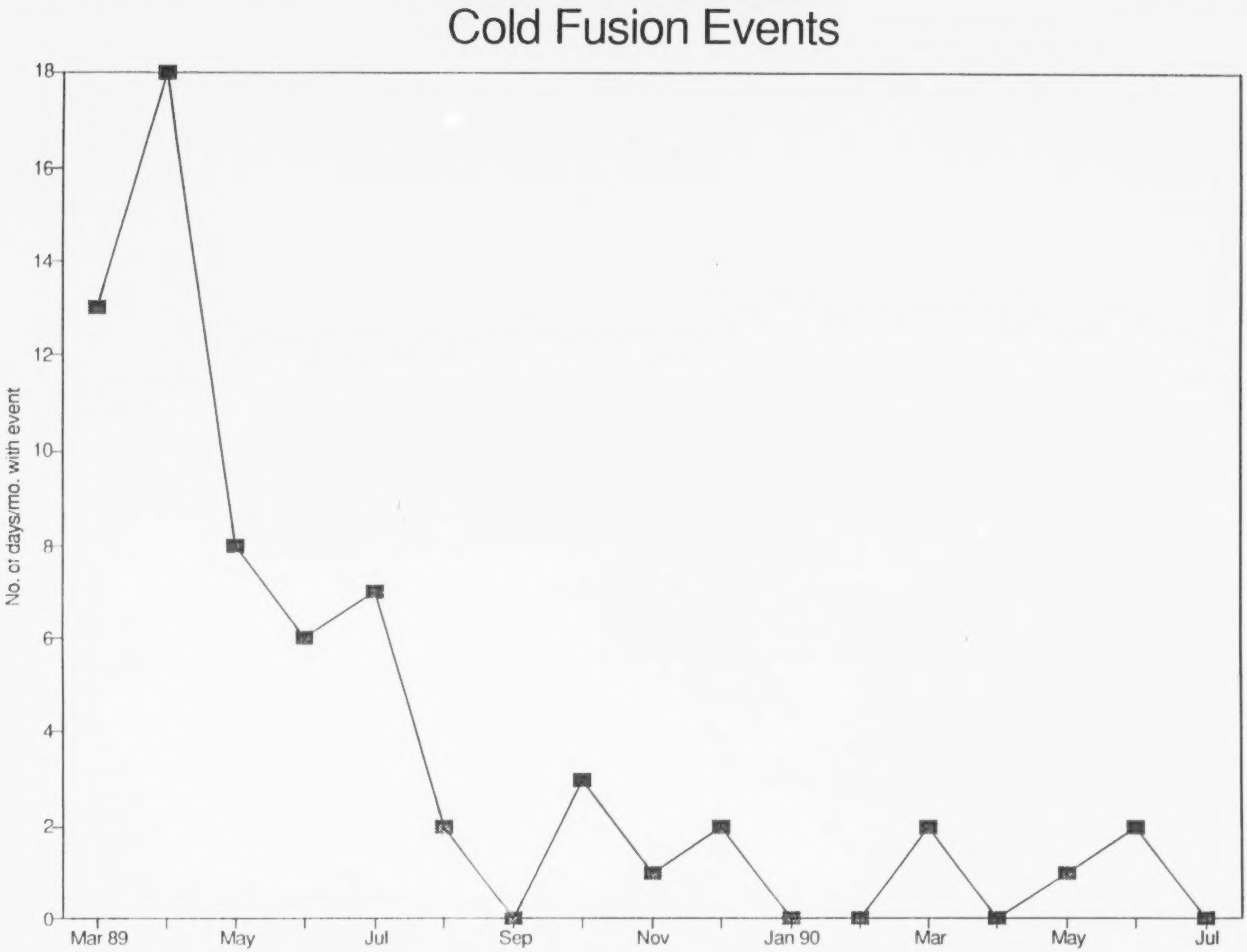

Cold Fusion Events

Fig. 1b

MODIFIED
TRUISMS ABOUT SCIENCE IN THE MASS MEDIA

1. Accurate.
2. Errs mainly by sin of omission
3. Generally balanced (journalistically).
4. Presents scientific "factoids," without context
5. Focuses on issues immediately relevant to public.
6. Not sensational.
7. Accessible to most readers.
8. Plenty of blame to share among scientists and journalists.

Fig. 4

TRUISMS ABOUT SCIENCE IN THE MASS MEDIA

1. Not very accurate.
2. Not very complete.
3. Gives too much credence to crazies.
4. Misses main point of scientific issue.
5. Spends too much time on medicine.
6. Too **SENSATIONAL!!!**
7. Too complicated for most readers.
8. Problems caused mainly by lousy journalists.

Fig 3

Figure 5. labels

Brkt = Breakthrough
Skp = Skepticism
Expt = Experiment
Cntv = Controversy
Disc = Disclosure through press conference
Mth = Method
Ptnt = Patents
Phys vs Chm = Physicists vs. chemists
Thry = Theory
Impl/Pol = Political implications
Impl/Env = Environmental implications
Impl/Bus = Business implications
$/PF = Financial contributions by Pons & Fleischmann
$/UT = Financial allocation by state of Utah
$/New = Source of new funding

Fig. 5

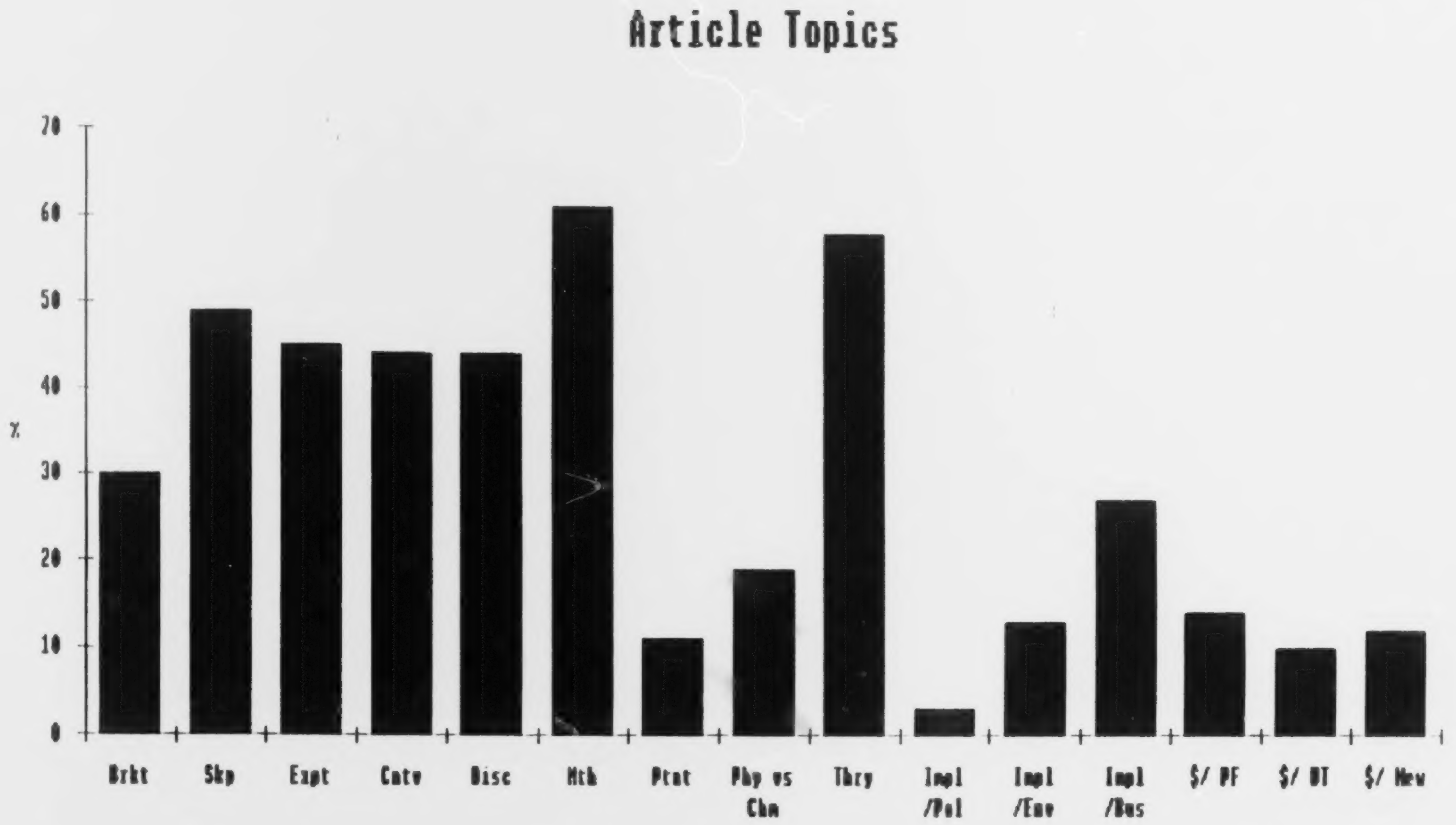
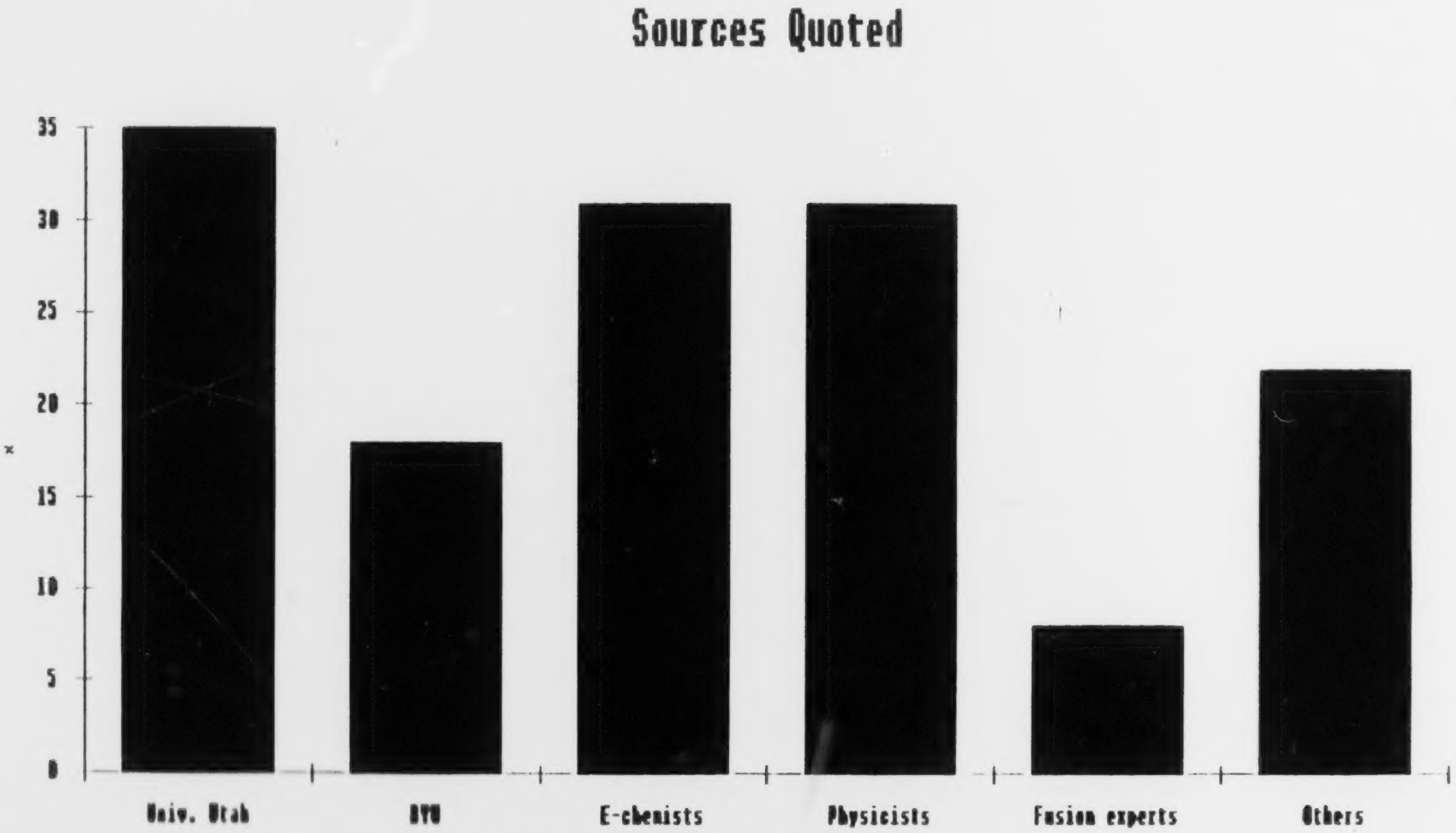

Article Topics
70
60
50
40
%
30
20
10
0
Brkt
Skp
Expt
Catv
Disc
Mth
Ptnt
Phy vs Chm
Thry
Impl /Pol
Impl /Env
Impl /Bus
$/ PF
$/ DT
$/ New

Figure 6, labels

Univ. Utah = University of Utah
BYU = Brigham Young University
E-chemists = electrochemists
Physicists = physicists
Fusion experts = general fusion experts (discipline not specified)
Others = others

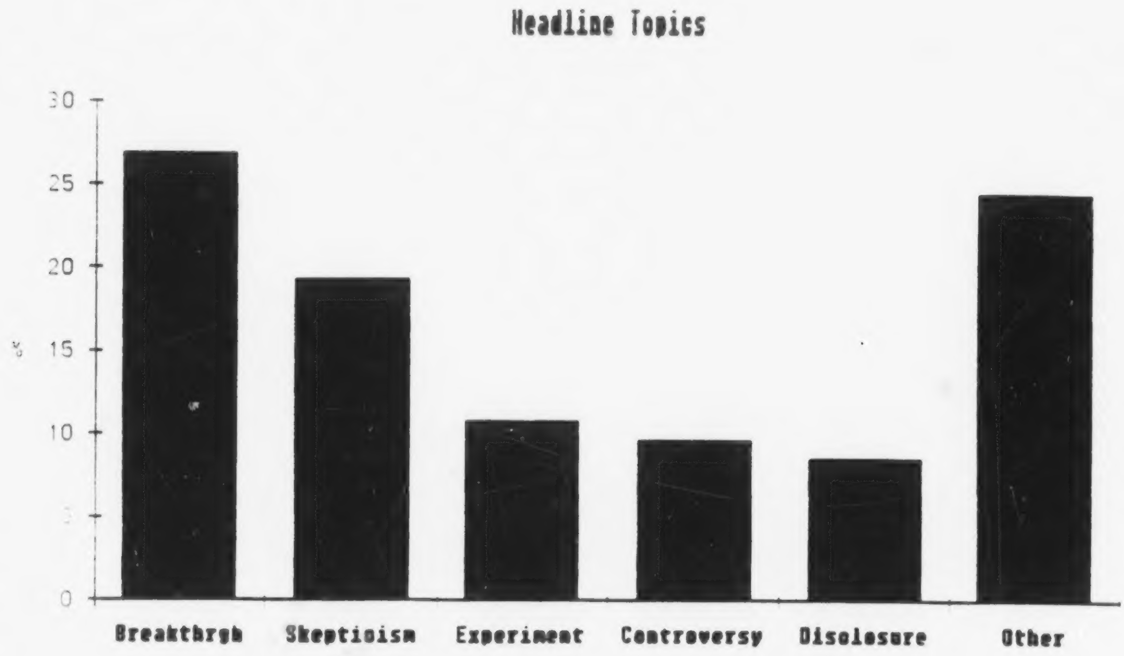
Fig. 6


Sources Quoted
35
30
25
20
15
10
5
0
%
Univ. Utah
BYU
E-chemists
Physicists
Fusion experts
Others

COLD FUSION IN THE MASS MEDIA

1. Accurate.
2. Erred extensively by sin of omission
3. Balanced journalistically, but not scientifically
4. Presented scientific "factoids," without context
5. Did not focus on issues immediately relevant to public.
6. Not sensational.
7. Accessible to most readers.
8. Plenty of blame to share among scientists and journalists.

Fig. 8


Headline Topics

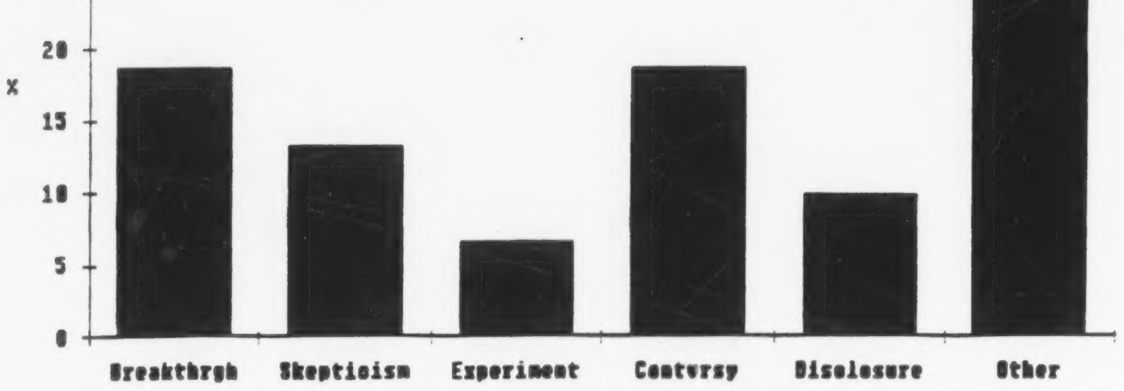

Lede Topics

Fig. 7

Comparison of The New York Times's and Science's Coverage of the Birth of Modern Atomic Theory: 1896-1922

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The short war called "Desert Storm" ushered in the decade of the 1990s. It was so quickly won, in part, because the American and Allied victors enjoyed a large technological superiority over their Iraqi enemy. One of the compelling reasons stated for the winners' taking up their high-technology battle sword was to eliminate Iraq's ability to develop its own stockpile of nuclear weapons. The thought of a country, which was perceived to be run by such a reckless leader, having in its control such a destructive power helped ignite the American people's fear and produced a call for action.

Yet, how and where did the American public develop this fearful perception of the mysterious power and destructiveness that lies within the atom? To some, the word "nuclear" immediately generates video images of mushroom clouds rising over a barren landscape, while to others it brings up facts read in their local newspaper about the scientific aspects of nuclear energy.

These scenarios, in which the media act as the source of nuclear knowledge and perceptions, may not be too far off the mark. Studies have shown that in modern society much of the general public's knowledge about such technological advancements as nuclear weapons and power plants, as well as the scientific theory on which they are built, is learned through the reading of magazines and newspapers.(1)

The print media are increasingly becoming aware of this growing market for science news.(2) The number of popular periodicals dealing with science and technology is continually growing, and more newspapers have developed special science sections. In 1956 The New York Times had three science writers, while in 1987 it employed 12 reporters on its science beat.(3) Universities as well as science associations now offer programs to help train science writers. The boom in science writing occurred after World War II and again during the space race of the 1960s, but the need for such a journalist was actually perceived long before that.

According to science historian Spencer Weart, the birth of the science writer can be traced back to the birth of modern atomic theory at the turn of the 20th century.(4) This was the time in which William Rontgen revealed the mysterious power of his x-rays, and Marie and Pierre Curie told the world about two radioactive elements, which they called polonium and radium. These discoveries, and the ones that followed, rapidly changed how scientists viewed the material that makes up the universe, but this growth in knowledge was no longer limited to "ivory tower" scientists and scholars.

Newspapers, such as The New York Times, quickly realized during this period that science was an important and entertaining topic, and thus communicated modern research and technology to the masses as never before. At the same time, editors realized the need for reporters who could communicate with scientists in order to clearly relay important technological innovations to the public.(5)

To better understand this early relationship between the press and science and its corresponding effect upon the messages conveyed to the public, this study will look at how The New York Times and its early science writers covered the birth of modern atomic theory during the years from 1896 to 1922.

The questions and format for the study evolved in part out of two individual studies by Ed Caudill and Spencer Weart. In 1987, Caudill published a study in which he compared the amount of coverage given Darwin's Theory of Evolution in both The Times and the American Journal of Science. He concluded that The Times's and the Journal's patterns of coverage were similar and were both influenced by the newsworthiness of the issue over time.(6)

Weart, in his comprehensive book Nuclear Fear, traced the evolution of American nuclear images across the span of the century. In developing his main conclusion, that "the images we cherish have a greater role in history than has commonly been thought," he stated some specific observations about the press and its early coverage of the nuclear issue. He analyzed headlines relating to nuclear issues in the Readers' Guide to Periodical Literature, and "found very little negative language" from 1900 to the middle 1920s. Most of the headlines he coded were either neutral or hopeful.(7)

This study will conduct a detailed content analysis of The Times during this period of transition in order to more fully explore Weart's observation. By analyzing the tone of The Times's coverage for the story and lead as well as headlines over this early period of nuclear science, some light will be shed upon the interaction between the development of nuclear science and technology and early science journalism.

In addition, Science, the journal for the American Association for the Advancement of Science, will be used to compare the patterns and tone of The Times's coverage with that of a scholarly periodical of the time. Through a combination of qualitative and quantitative analysis, this study will create a clear picture of the knowledge, images and messages that these members of the media were presenting to the public about the nuclear issue during this period.

The specific questions to be asked are:

1. What was the pattern of coverage in The New York Times in regard to the atomic issue from 1896 to 1922?

2. What was the tone of this coverage?

3. How does the pattern and tone of The Times's coverage compare to that of Science?

4. What insight does the analysis provide about the relationship between science journalism and the sociology of science and technology in terms of messages being relayed to the public?

METHOD

A stratified random sample of 123 stories was derived from the 749 articles, editorials and letters to the editor identified in The New York Times Index for the period from 1896 to 1922. All three story formats were selected because the central purpose of the study was to analyze the range of messages and images that were being conveyed about nuclear science and technology in The Times. From here out, the terms "article" and "stories" will be used interchangeably to refer to all of the story formats coded.

Eighteen ninety-six was selected as a starting date for the analysis because it was the first year that contained an article on Rontgen's 1895 discovery of the x-ray. The discovery of the x-ray provided scientists with a doorway into the inner workings of the atom.

Marie Curie's historic visit to America in 1921 was chosen as the ending point. During her few months of travels, she received a number of awards and elicited a good deal of interest in radium across the country. The year after her visit was included solely to see if and how coverage changed.

Further evidence supporting 1921 as an endpoint is that it was also the year in which Edwin W. Scripps organized the Science Service. The Service was a press syndicate aimed at translating science plainly so that all Americans might understand. It can be seen as a marker of a change toward more comprehensive coverage of science, and therefore sets off the preceding years as a period of early growth in the media's coverage of science.(8)

Articles counted during the period were located in The New York Times Index under the key words Atomic, Cancer, Energy, Medical, Photography, Radium, Radioactivity, X-Ray and all cross references listed in the index. The articles were then coded for amount of coverage and for the five categories of discovery and theoretical; medical; price and supply; energy; and military. The categories arose from a pre-reading of a small sample of articles, and fit the majority of stories encountered. Stories that did not fit a specific category were listed in either of two additional categories, multiple or other.

An example of a "multiple" story was one in which both the medical benefits of radium are discussed as well as the difficulty in mining uranium ore.(9) An example of an "other" story was one about a boy who was said to have x-ray eyes. He was reported to have been able to see where pools of oil lay miles beneath the surface of the earth.(10)

To help prevent a biased sample across the time period articles were selected using a random numbers table. The numbers generated were applied to a listing of the indexed stories and a proportionate percentage of indexed stories were selected and coded for each year.(11)

In the journal Science a random sample of 52 articles was generated from the 155 stories coded from the journal's index. This index was not up to the standards of The Times Index, so the whole index was searched for articles concerning the nuclear issue. Most were found under the headings of Atomic and Radium.

All articles for both publications were then coded for positive, neutral and negative tone of nuclear content. Times articles were coded for the tone of their 1) headline, 2) lead and 3) total story. The more scholarly style of the Science articles meant that only the overall article tone was coded.

The following definitions and parameters were used:(12)

Tone -- Defined as the position and/or messages the segment of the article presented on the nuclear issue(s).

Positive -- Coded when the headline/lead/story suggested, implied or stated that the nuclear issue(s) was beneficial, helpful, good or useful to individuals and/or society. The topic of the article was presented in a benevolent and good light.

Neutral -- Coded when the headline/lead/story neither indicated, accused, implied or stated that the nuclear issue(s) was good, bad, helpful or harmful to society or individuals nor did it redeem, promote, or destroy them in any way. Articles that were well balanced in presenting alternating opinions were also included in this category.

Negative -- Coded when the headline/lead/story suggested, implied or stated that the nuclear issue(s) was harmful, fatal, or dangerous to living beings and or society. In these articles, the reader received a message of caution or disdain toward the nuclear issue(s) or a feeling that the technology or science should be approached with caution or dread.

Intercoder reliability was proven to be 100 percent for headline and lead tone and 84 percent for article tone. The figures were calculated by using a per-item agreement method for a randomly selected group that consisted of over 10 percent of the total combined sample population (N=18 of T=175). The test coding was done by an experienced coder other than the original coder. Errors for story coding often related to borderline stories. Due to the subjective nature of the coding categories, 84 percent intercoder reliability indicates that the results achieved provide a fairly accurate portrait of the total population.

RESULTS

The results of the sample show that early nuclear discoveries and technologies were continually covered in both The New York Times and Science during the period studied.

The first research question asked was about the pattern of The Times's coverage of this early atomic research. As Graph #1 shows, the coverage was variable over time. Comparing this graph to the Timeline shows that most of the peaks in coverage closely followed such major discoveries as Rontgen's 1895 discovery of x-rays, of which 68 articles were indexed. Yet, not all coverage peaks are a direct result of scientific discoveries. Of the 131 stories listed in the 1921 NYT-Index, 62 were articles referring to Marie Curie's American tour.

The years 1913 and 1914 contained the most stories of any two-year period for the nuclear issues coded (see Graph #1). The three categories that received the majority of the coverage were discovery, medical and supply and price.

The second research question concerned the tone of The Times's coverage. Table's #1, 2 and 3 reveal a large consistency among the coded percentages for headlines, leads and story tone for The Times. The only significant difference being that a larger number of stories, about 47 percent, were coded positive as opposed to about 37 percent for headlines and about 39 percent for leads. This indicates that The Times may have been a bit more conservative in their headlines and leads, but provided more positive statements deeper within the articles.

A comparison of the pattern of coverage for The Times and Science was part of the third question asked. Both Science and The Times had similar patterns of coverage. Early coverage of the x-ray discovery and the subsequent experiments were heavy. The Times ran 88 articles from 1896 to 1898 about the phenomena, while Science ran 60. The year 1896 had by far the most articles listed in the journal for the nuclear issue. The next highest number of stories in a year was 10 in 1914 (see Graph #1).

Question three also asked about the comparison between the tone of the coverage in both periodicals. Tables #3 and 4 show that Science was much more neutral than The Times in its coverage -- 71 percent to 41 percent. This is the position expected from a scientific publication that was honoring the tradition of objectivity, but still the journal did not entirely refrain from promoting a positive view.

Both The Times and Science contained a significant percentage of stories that were positive toward early nuclear discoveries and technologies. Over the period studied about 27 percent of the Science articles were deemed positive compared to about 47 percent for The Times (see Tables #3 & 4).

Although almost half of The Times articles were found to be positive, about 12 percent expressed a negative tone toward nuclear issues. Only one negative article was coded in Science (about 2 percent of total), and it was coded in the discovery category (see Table #4).

The majority of the negative articles coded in The Times fell in the category of medical news. Of the 47 medical stories coded about 23 percent were found to be negative (see Table #3).

The negative medical articles dealt mostly with radiation damage and cancers, with 1914 being the year with the most negative Times articles (see Graph #2).

Of the 13 stories coded in 1913, all but one took a positive tone toward radium and its use. In contrast, in 1914, the tone of the coverage was spread evenly among the coded articles. Of the 18 stories coded, 6 were positive, 7 were neutral and 5 were negative. More of the neutral articles during this time presented a better balanced view of both the negative and positive aspects of radium.

DISCUSSION

In most scientific discoveries, the terms science and technology overlap. It is often hard to separate the two areas, though many have tried. In a broad sense, science can be said to be the attempt to explain natural phenomena using methods of observation, experiment and hypothesis testing. Technology is the applied use of this knowledge through equipment, utensils, tools and devices that are called technics. These technics or technologies are often used to manipulate the environment to fit perceived human needs.

An interweaving of nuclear science and the resulting technologies and technics was found to be almost simultaneous in this study. The first article coded from The New York Times was a front-page article from February 7, 1896, discussing Rontgen's x-rays. The lead stated that after hurried attempts at Princeton to reproduce Rontgen's data, experiments have "yielded some very interesting results."(13)

It was clear from the article that the actual nature or effect of the rays was still a mystery, but it went on to state, "the practical application of this great discovery" may be used both in the medical and industrial fields. Already the line between theoretical science and applied technology had been crossed with this article, of which almost 80 percent was direct quotations from a Princeton professor.

The lead from a Times Sunday magazine article on September 6, 1896, also highlighted the usefulness of Rontgen's discovery:

> While some discoveries of a purely scientific character appeal only to a limited class, others broadly affect the life and happiness of the human race and thus become of universal importance. The discovery of Prof. Rontgen is unique in that it interests alike the scientific and non-scientific intelligent minds of all countries. To the world of science it suggests new problems as to the constitution of matter and the subtleties of electricity, while to the race at large it opens up a new means of diagnosis and relief of suffering and disease.(14)

Rontgen had produced this mystery radiation, which he named x-ray ("x" standing for unknown), by pumping great amounts of electricity through a vacuum tube or cathode tube. The tube emitted a high energy ray (stream of particles) that made certain minerals fluorescent, and could penetrate thick layers of metal and wood and still have enough energy to make an image on a photographic plate.(15)

The journal Science reprinted a translated article from its British counterpart, Nature, by W.K. Rontgen, on February 14, 1896. Nature had reprinted the article from a 1895 German journal for the physical sciences.(16) (This long trail of publications gives an indication of how science news jumped from source to source at the turn of the century. It also graphically points to the place on the academic chain in which America fell in terms of atomic physics during this early period.)

The Science article explained that Rontgen had learned that the radiation did not travel well through the dense element of lead and was not affected by a magnetic force. During this era, it was generally assumed that matter was made up of hard, indestructible balls called atoms. The different types of atoms such as lead or hydrogen were said to be individual elements. These atoms were thought to be controlled by mechanical rules described centuries earlier by Sir Isaac Newton.

Newton's rules state that matter should act in the same predictable manner at all times. For example, a falling apple must always obey the mechanical law of gravity and take the shortest path to the earth. The space in which this apple fell was thought to be the elusive ether, the animating force that held everything together and existed wherever matter did not.

The Science article went on to relate that Rontgen was certain that the new rays were not observable to the eye, like those of visible light, nor hot like infrared rays, nor like the powerful ultraviolet rays from the sun. At the end of his article, Rontgen followed proper research etiquette and stated that more experiments were needed to better understand just how these rays traveled through the ether. The article also contained a picture of an x-ray of a hand, in which the bones could be clearly seen along with a large wedding band.

Articles in both Science and The Times during this early period from 1896 to 1903 increasingly dealt with both the medical and industrial aspects of the new energy and the device that produced it. A Times article from June 27, 1897, talked of how the "invisible rays will in the future play an important part in the lighting of our houses and streets." The same article went on to state that when "the human body has been lighted up with them, it has been possible to find fragments of glass, needles, bullets inside it, and the surgeon seeing has been able to remove them."(17)

At the same time, a few stories were also being run that dealt with the adverse effects that the unknown rays could have upon the human body. A Times article from April 27, 1897, relayed the story of a man who was suing his doctor for negligence after his broken leg had healed shorter than the other. Wanting to use the new x-ray technology to prove his case, he had unsuccessfully tried four times to get an x-ray of the mended spot, and so on the fifth time he exposed his leg to the high energy rays for almost two hours. Shortly thereafter, the area that had received the radiation became gangrenous and doctors stated that the flesh, nerves and ligaments of the area had been totally destroyed.(18)

The early setbacks and tragedies that were reported in the press apparently did nothing to stem the tide of scientific discovery and interest. In 1896, Henri Becquerel showed that the element uranium was naturally radioactive and emitted rays that acted similarly to Rontgen's x-rays. Without any electrical stimulus, uranium's radiation, like x-rays, could make an imprint upon a photographic plate.(19)

In 1897, J.J. Thomson discovered that the mysterious x-rays were actually particles or ions, which he called corpuscles (we now know them as electrons). The high electric energy of the cathode tube caused these corpuscles to be shot out from the atoms of the metallic filaments within the tubes, much like the light wave/particles that are given off from the filament of a light bulb.

Science ran an article about Thomson's further research into the nature of these particles in its September 7, 1900, issue. The article relayed just how revolutionary his work was at the time. Thomson had begun to conceptualize matter and atoms not as solid balls but as porous. Atoms were not one piece but were made up of tinier particles such as his corpuscle. Just as everything else, these particles were thought to be held together by the ether.

Thomson had realized that x-ray electrons were much smaller than the smallest atom, hydrogen, and this is why they were able to travel through wood and metal. An electron simply zipped through the space between the atoms of the metal or wood surfaces until by chance it was stopped by another atom or particle. Lead, though, could stop x-rays sooner than other materials, because it was more dense than the other materials, increasing the odds that an x-ray particle would hit an atom of lead.

Science took on a very positive tone when discussing Thomson's work: "'his theory must be classed among mere Utopias.' It would seem that a beginning has been made in attaining Utopia." This was not the last time that references to Utopia's and the relieving of all illnesses and energy problems were associated with the communication of early atomic theory.(20)

A positively coded Times article from November 2, 1901, was headlined:

> X-RAYS USED AS A REMEDY FOR CANCER
> -Chicago Doctor Declares Rontgen
> Light is a germicide.
> -permanent cure said to have been effected
> in the case of Mrs. Orrin W. Potter.

Mrs. Potter had received x-ray dosages every other day for three months as treatment for breast cancer. The doctor treating her was adamant about the success of his treatment and said, "I believe this treatment is an absolute cure for all forms of cancer." He went on to explain his theory that x-rays kill the cancer-germ and then stimulate glandular action for new cell growth. Only one source was cited for this story and 85 percent of it consisted of direct quotes from the treating doctor.(21)

Two years later, another radioactive source was introduced to the world. It was radium, and it behaved much like Rontgen's x-rays. Marie and Pierre Curie, through investigations with

Becquerel's uranium radiation, had noticed that an ore called pitchblende had an abnormally high amount of radiation. They found that the radiation of pitchblende came from two unidentified radioactive elements within it. On July 18, 1989, they identified one of them as polonium, named after Marie's homeland of Poland. They isolated the second element, radium, on December 26 of that same year.(22)

Becquerel and the Curies split the Nobel Prize for Physics in December 1903 for their respective studies. In the coding sample it was found that Science reported the radium discovery in July 1901, almost a year-and-a-half before The Times. The Science article raised the possibility that the luminescent quality of radium salts were in fact "the longed for light without heat." But it tempered itself by admitting that the fortunes would have to wait until the cost of extracting radium from pitchblende and its other ores decreased.(23)

Besides scooping The Times on the theoretical status of radium, Science also beat them by about five months in referring to radium as a cancer treatment. A letter from Alexander Graham Bell to a doctor in Washington, D. C., was reprinted on July 31, 1903. It relayed Bell's suggestion that if both radium and x-rays had been found to cure external cancers, "there is no reason why a tiny fragment of radium sealed up in a fine glass tube should not be inserted into the very heart of the cancer."(24)

Science's scoop is made more interesting when considering that only six medical stories were coded from Science Index, while 47 were selected from The Times.

One of the first articles coded from The Times discussing radium appeared a couple of weeks after the awarding of the 1903 Nobel Prize. Sir William Ramsay, who had become famous for his 1895 discovery of the second smallest element, helium, wrote of the new discovery as if he were giving a lecture to a class. In his article, he relayed that one product of radium radiation was the element with which he was very familiar, helium. This process of manufacturing one element from another he referred to as transformation.(25)

Ramsay and other scientists such as Ernest Rutherford were intrigued by the production of such a small atom as helium from the larger atom of radium. It invoked images of matter changes much like those of the alchemists, who sought among other things the ability to turn lead into gold. Yet, among these references of new paths to wealth, Ramsay alluded to his doubt of obtaining the mythical transformation of elements:

> [C]an the process be reversed? No one knows. But as gold is an element of high atomic weight, it may be confidently stated that if it is changing, it is much more likely that it is being converted into silver and copper [smaller elements of lower atomic weight than gold] than that it is being formed from them.

An editorial, written soon after Ramsay's tempering views toward metallic alchemy, attacked the claims of doctors who had used radium salts to cure cancer:

> Meanwhile it is obvious that the evidence thus far produced will be no more satisfactory to physicians than are the canes and crutches which decorate certain shrines as evidence of the curative power of relics....There is plenty of opportunity to

> prove the efficacy of radium in the cure of cancer, and when this is accomplished we shall hear of it under conditions leaving no more room for speculations...(26)

Still, these cautionary phrases were not the status quo in the articles coded. Most of The Times's headlines dealing with medical news during the period from 1903 and 1912 had a positive tone similar to that which topped a three column spread in The Times Sunday supplement of July 24, 1904:

> War on Skin Cancer
> Waged with Radium
> Berlin specialist tells of his epoch-making cures, methods and results.

The article, based on one source, talked of cures for tongue, lip and skin cancer as well as psoriasis and swollen hands. The form of treatment was a daily half-hour application of a small amount of encapsulated radium salt plastered to the skin.(27)

Many doctors and scientists were interested in the inner workings of these healing rays. Ernest Rutherford was one such scientist. In an article about his research in the June 10, 1904, issue of Science (which was a reprint of a lecture that had been covered by The London Times), he discussed how scientists had identified the three kinds of rays that made up radium's radiation. These rays had been labeled alpha, beta and gamma, with gamma being the highest energy and most penetrating of the three. Among more discussion of alchemy-like elemental transformations by radium's emanations, the scientist spoke of how:

> If we could collect a cubic inch of the emanation, the tube that contained it would probably melt, while a few pounds would supply enough energy to drive a ship across the

> Atlantic, though each of these pounds would require 70 tons of radium to supply it.(28)

The magical potential of radium was being communicated both in a scientific medium such as Science and in a popular press publication such as The Times. A front page headline from the June 20, 1905, issue of The Times read:

> GENERATION BY RADIUM
> Cambridge Professor Reported to have Produced Artificial Life

The headline referred to an experiment in which radium and sterilized bullion, after being placed in a test tube, had generated cultures that seemed alive, and thus "almost certainly demonstrated the possibility of spontaneous generation."(29) No evidence of reproducibility nor any other source was included in the two-inch article.

A Times article from February 6, 1904, related the manner in which some scientists actually paid homage to the power of radium. At one point, during a technology club's annual dinner, each member drank a toast with liquid that had been irradiated with radium capsules. The lights were then turned off and the scientists were treated to dancing skeletons and pasteboard chickens, which had been painted with luminescent paint. One scientist then appeared in the dark and lectured with a luminous cigar in his mouth.(30)

The drinking of the radium toast possesses images of a eucharist to the god of scientific knowledge. Much of the coverage over the next few months carried this same awe-filled tone. Yet, while many stories praising radium and related scientific advances continued to be written, more articles also began to appear discussing the dangers of excessive exposure to radium's precursor -- Rontgen's x-rays.

A Times article from June 1, 1906, talked of the tragic end met by a doctor who had long explored the healing power of x-rays. In the course of two years the doctor had to have both of his hands removed because of cancerous tumors as well as part of his shoulder and chest. Finally, the doctor realized that he could not stop the cancer from killing him and so "calmly and philosophically waited for the end, with the only consolation of knowing that he had done something for the advance of medical science."(31)

On a related note, an article from The Times on April 7, 1907, contained a warning from the German Rontgen Society, who had passed a resolution to prevent unlicensed persons from using x-rays to diagnose and treat illnesses.(32)

These and other articles about deaths caused by the mystery rays began to appear in The Times more frequently, with 1914 being the year in which the most stories were written with such a cautionary and negative tone toward both x-rays and radium (see Graph #2).

Science, however, kept away from the negative aspects of radium in its few medical articles. The only negative story coded for Science was coded in the discovery category. It was a letter to the editor, which itself referred to a letter (that had been reprinted from The London Times) from the British scientist, Lord Kelvin. Kelvin had chastised the scientific community for seemingly accepting transmutation and the alchemy of elements without solid evidence. The letter writer, Henry Armstrong, responded:

> Workers in the radium school appear to have cast caution to the winds and to have substituted pure imagination for it. Among ourselves, we should always be at liberty to postulate the most crack-brained of hypotheses, to dream the wildest of dreams, as a means of guiding inquiry; but we should not court popularity on such a basis. By so doing we lose all claim to guide public opinion.(33)

Not many seemed to share Armstrong's and Kelvin's doubts about the application of proper scientific method in investigating radium. A page-one article in The Times about Ramsay related how "The great scientist" felt confident about his research into the transformation of elements, which he now called transmutation. He had carried out experiments in which he felt sure that radium radiation had degraded copper into the lower atomic-massed element of lithium. This journalistic piece was not the usual one-source article, but was one of only 18 of the 123 Times articles coded that contained more than one cited source (see Table #5).

In the article, the journalist had attempted to explain the scientific controversy surrounding Ramsay's claims. He had listed both those who agreed with Ramsay's findings as well as those, like Lord Kelvin, who were holding out for more replicable data and for greater amounts of the rare radium to be made available for larger experiments. The article also contained the only reference to a science writer. The science journalist sided with Lord Kelvin. He apparently thought Ramsay was just trying to prove what alchemists had failed to prove for centuries. The writer communicated his negative views about such an attempt as well as his view on the status of American science with his comment:

> Those who have studied the literature which has recently dealt with the subject will have noticed that if we except those actively working on radium, the belief in transmutation is for, the most part, confined to American textbooks, while writers such as Arrhenius, whose book was issued only a few months since, agree with Lord Kelvin in preferring to wait for further experiment...(34)

Science contained a short article by Ramsay himself on August 2, 1907, in which he discussed his transmutation findings.(35) It followed this up, on December 4, 1908, with a lengthy article of 399 lines by an independent researcher who stated, "we must say that we have not succeeded in confirming the experiments of Messrs. Ramsay and Cameron."(36) The reason given was that the researchers could not obtain a sample of copper that was free of all traces of lithium before irradiating it, and even when irradiated they never could produce the amount of lithium that Ramsay had claimed.

Similarly, not all the stories from 1904 to 1912 spoke of the good times to come from radium's power. A Times editorial from May 8, 1904, talked of how some scientists had said that radium's "heat rays are capable of melting down stones and massive iron and steel structures and that its qualities must interdict all war."(37) The writer thought it interesting that this very concept had been raised by H.G. Wells six years earlier, in his book The War of Worlds. The author felt certain that the martian death rays, from the classic space invasion story, were that of radium.

The debate over the pros and cons of radioactive technologies was still raging in September of 1910, when the International Congress of Radiology and Electricity was held in Brussels. The proceedings of the Congress clearly indicated that Ernest Rutherford and Marie Curie were looked to as the leaders in the field of atomic science. Rutherford stated that a standard of pure radium was needed as a reference for future research, and Curie agreed to produce 20 milligrams of the purest radium salt sample she could. At the meeting, the esteemed scientist was honored by having her name given as the unit of radium emanation. Radioactive disintegrations would be measured from then on in curies.(38)

During this period, Curie became increasingly interested in using radium to treat cancer. The coded sample for the years from 1913 to 1922 indicated that many researchers shared her interest. This period contained many medical stories about the ongoing debate about radium's safety and usefulness. Medical stories from 1913 were for the most part like a neutral one from The Times, which spoke of great advances in treating cancer since countries began to set up radium institutes. Although its lead stated there was, "proof positive this week of the curative value of radium in cases of cancerous vascular tumors, classed as deep angiomas," the story ended by saying that the full effect of radium cancer treatment was still unknown:

> [T]he investigators make no extravagant claims regarding radium's effect on cancer. The best method of proceeding, they assert, is to combine the therapeutic effects of radium with surgical operations.(39)

A large number of The Times's medical articles from 1914 took a position similar to a large piece that ran in the Sunday magazine section of the January 4th issue. The writer was Van Buren Thorne, M. D. A large seven-column headline proclaimed:

THE PLAIN TRUTH ABOUT THE RADIUM CANCER CURE

The article started out with the statement that historians will write of 1914 as the year when "the civilized world, as well as the men of science, were engrossed in the discussion of this subject: 'Will radium cure cancer?'" Through the course of his article, Thorne relayed that scientists were "trying to curb an unjustified over-enthusiasm...[for they had] reached the ear of the world-audience attuned nowadays in a remarkable degree to catch the faintest whisperings of progress from the laboratory and the clinic."(40)

The Times's coverage of medical issues was at its highest in 1914, while pieces about discovery and theoretical issues were almost absent. In contrast, Science ran a six-page piece on July 24, 1914, discussing the great advances in atomic theory. One of these advances being Niels Bohr's revelation that atoms have a positively charged nucleus around which the negatively charged electrons revolve. Bohr stated that the revolving negative electrons create an electric current which helps to hold the atom together.(41)

As the debate continued over the exact nature of the radium atom, more stories appeared about the price and supply of the rare element in both publications. There were four such stories in The

89

Times from 1913 and 1914, with multiple stories counted, and two in Science. A Times article from October 6, 1913, talked of Austria's plans to corner the world's radium market by purchasing mines and patents.(42) While another from October 24, spoke of two philanthropists who had purchased the world's largest deposit of radium, located in Paradox Valley, Colorado. The men were quoted as saying, "not one cent's worth of the radium would be for sale...every particle of the precious metal would be used in the cause of humanity."(43)

Just how large a gift these men were donating to humanity is realized by considering that one gram of radium was worth $120,000 in 1913. Another article contained a discussion about a bill, which would allow the federal government to take control of all radium ore held on public lands "for the benefit of the whole Nation, so that the government would see that the radium was distributed where it would do the most good."(44)

A Science article written by a governmental geologist on October 31, 1913, also talked about the radium-carrying carnotite deposits in Colorado as being "the largest source of radium at the present time." In discussing how to best use this rare resource, the author talked about the need for a steady supply of radium of high quality. As evidence for such a need he stated:

> The "wonders of radium" have been so extensively exploited in the public press that already the naive is being employed as a psychological agent in advertisements of all kinds of materials, many of which contain no radium at all.(45)

From 1913 until Marie Curie's American visit, in the spring of 1921, several more articles ran which dealt further with the use of the new technologies in a negligent manner for profit. The eight-year period was also highlighted by two articles in which radium was used for military-type purposes. In one article, the rays were to be emitted from airplanes to help locate submarines beneath the water.(46) In the second, the rays were to be used by police to analyze unexploded bombs. Specific mention was made of being able to detect the high explosives that soldiers may have brought back from World War I.(47)

Radium's potential for solving problems that arose out of the war was also observed in a different trend. From 1913 to 1922, many articles appeared that dealt with the use of radium specifically for energy purposes. This was a direct result of the adversity encountered from coal shortages during the war.

The Times wrote about Sir Oliver Lodge's speech, in which he noted that molecular fuels such as coal were running out and therefore humanity must look to the atom, where there is "enough energy to raise the German fleet from the bottom of the sea to the top of the Scottish mountains." Lodge added that he hoped,

> the human race would not discover how to use this energy until it had brains and morality enough to use it properly. If the discovery were made before its time, and by the wrong people, this very planet would be unsafe.(48)

Science did not include this paraphrase in its story on Lodge's speech. It instead highlighted that,

> Possibly there might occasionally be explosions due to the liberation of power more quickly than it was wanted, but in general he presumed that the conditions of utilization would be good.(49)

This is one of the few times in which a direct comparison was possible of the same event in both publications. They were essentially both positive in tone and content but for The Times's inclusion of Lodge's tempering philosophical visions.

In following the unlocking of the atom's secrets, Science (November 21, 1919) ran a seven-page article by Rutherford discussing the possibility of using the enormous energy of gamma rays to smash the atomic nucleus to investigate its inner workings. He explained that gamma particles travel at about 20,000 times the speed of a rifle bullet, and that an ounce of helium moving at the speed of a gamma particle, emitted from radium, would be equivalent to 10,000 tons of solid shot traveling at 1 kilometer per second.(50)

Rutherford's article highlights the fact that scientists were slowly learning of the secrets within Marie Curie's radium. Curie's American visit in 1921 was a milestone for the country and its relationship to her and her discovery. Women across the country donated money to buy a gram of radium for Curie to take back to France for her research.

A Times article from May 18, 1921, was headlined:

> MME. CURIE CALLED
> GREATEST SCIENTIST

The article relayed how she was the first woman to be awarded an Honorary Fellow of the American Museum of Natural History. References were made about her continued advances in the treatment of cancer. One chemist said, "I bring to Mme. Cure, the mother of radium, the love, admiration and affection of the chemists of America."(51) In an article from May 20, 1921, Curie was acclaimed the "high priestess of science."(52)

Science celebrated the significance of Curie's discovery and visit in an eight-page article by R.A. Millikan on July 1, 1921. The American physicist, who would win the 1923 Nobel Prize for, among other things, his oil drop experiment, which provided a measure of electronic charge, wrote:

> Madame Curie has always remained simple, modest and unaffected in the face of the world's applause. That is the highest compliment which a fellow scientist can pay her, and the surest sign that she is not an ordinary person.

He then went on to explain how her discovery of radium had helped to change the conception of the atom from a hard ball to that of something more like a miniature solar system, in which nuclei were like planets, electrons were like moons and gamma rays were like shooting stars. He ended his essay with the comment that:

> The most important thing in the world is a belief in the reality of moral and spiritual values. It was because we lost that belief that the world war came....[Yet] no efforts toward social readjustments or toward the redistribution of wealth have one thousandth as large a chance of contributing to human well-being as have the efforts of the physicist, the chemist, and the biologist toward the better understanding and the better control of nature.(53)

After seeing American sights like the Grand Canyon and Niagara Falls, Curie returned home with her radium gift, and was only mentioned a few times in 1922. The coded stories from that year discussed more uses of radium in industry, on things like watch dials and hard-to-see machine parts. X-rays also came back into favor as new technologies improved their reliability. More articles about their use in curing cancer appeared because of their relative affordability, as opposed to the high price of quality radium.(54)

The last Times article coded was from December 28, 1922. It relayed how scientists were able to photograph the smashing of atoms with alpha particles. The alpha particles were emitted from radium into an enclosure full of air supersaturated with water. All the dust had been pumped from the box and so as the high-speed particles traveled through the mist they left a water vapor trail which was then photographed.(55)

In just 26 years the source of Rontgen and Curie's mysterious rays had been tracked down and photographed.(56)

CONCLUSION

In terms of The Times's coverage of the early exploration of modern atomic theory, the data reveal that science writing evolved along with the new discoveries. There was a definite pattern of increased coverage of the differing sides of the complex issue over time (see Graph #2). Yet, the fact remains that there were 35 no-source stories and only 18 multiple-source stories out of a total of 123. This gives a good indication that there was still a lot of room for improvement in reporting the complexity and ramifications of this newly developing science (see Table #5).

Science took a much more neutral stance toward the early discoveries and technologies than did The Times, with a neutral figure of about 72 percent as opposed to around 41 percent. Still, the pattern of coverage was similar, as Caudill had found in his previous study concerning Darwin. In addition, the large number of reprinted London Times and Nature articles found in Science, indicates that, while the journal contained more in-depth coverage of each issue, it still had to rely on the European news services to get the "hot" science news, just as did The Times.

The time lapse between the discoveries and their coverage in the publications, which was indicated in the source citations of the coded articles, can also be seen when comparing the Timeline to Graph #1. Nuclear coverage lagged behind the newsworthy events both in Science and in The Times. Science did scoop The Times often though, as might be expected for such a specialized periodical, but also contained much fewer mentions of the negative aspects of the new technologies than did The Times.

Connotations and images of radium and x-rays as being magical were common in both samples, with more being found in The Times. Those who controlled these mysterious powers were referred to as being high priestesses and great scientists. Among these magic-like references, a few images of radium's destructive powers were also presented.

In Nuclear Fear, Weart brushed off the early negative press coverage given the nuclear issue, in part because the harm happened mostly to doctors and technicians, and also because larger and more gruesome disasters were prevalent in the newspapers of the time.(57) While the data in Table #3 support Weart's view that there was little negative coverage (12 percent) during this period, the qualitative picture was a bit different.

It is true that most of the early stories only presented one side of the issue, but the coverage did improve across time. More and more Times stories began to present better balanced articles about radium and x-rays, with 1921 being the year in which the most neutral stories were coded. And voices of caution were found to be present from the very beginning of modern atomic discovery (see Graph #2).

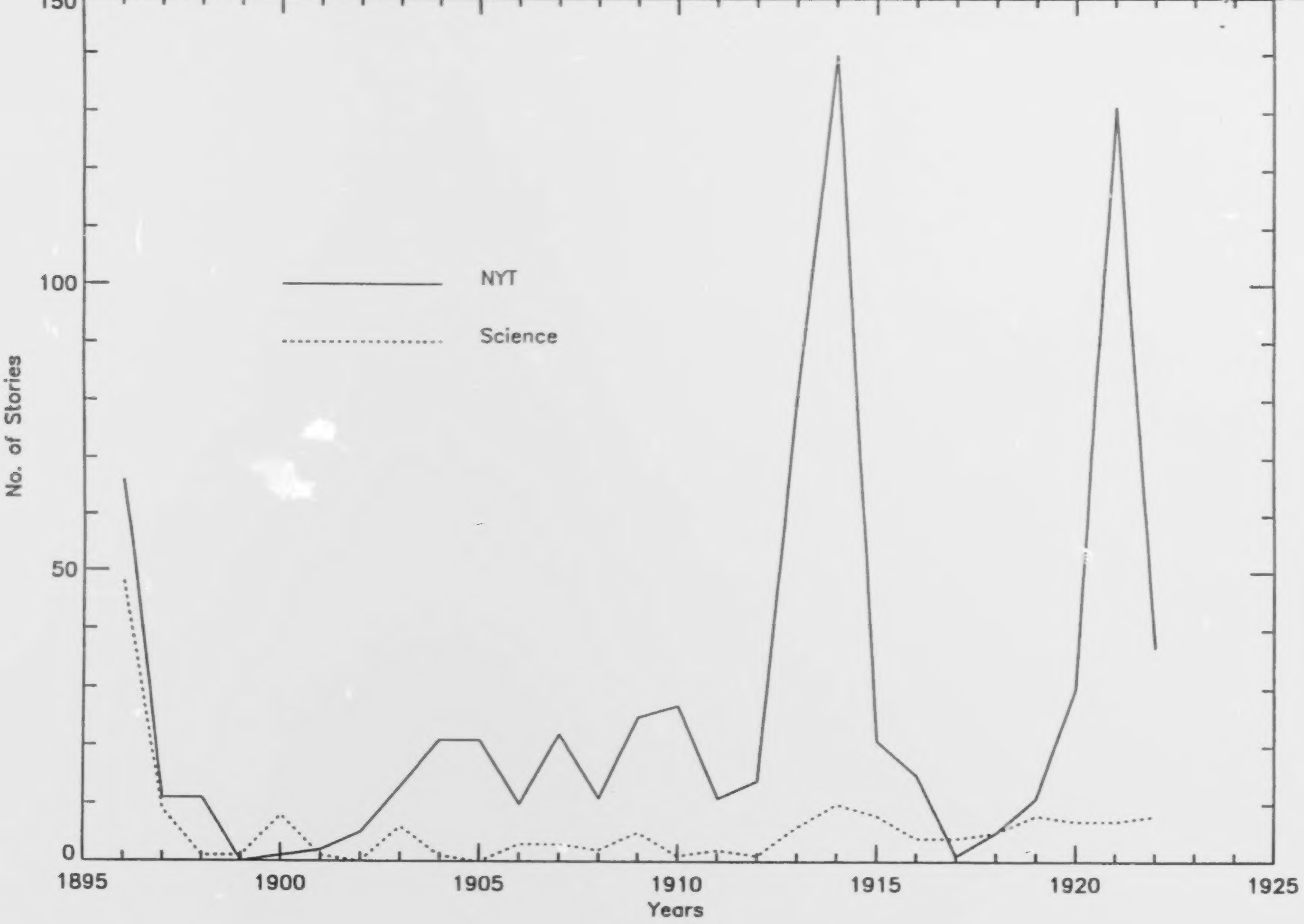
In the end, the study pointed to how potent a new scientific discovery can be. The resulting technologies were easily seen to have affected lives, and those who possessed the technologies and their secrets attained both wealth and fame.

This study showed that due to the complexity of the science discoveries at the turn of the century, much of the media's coverage was simply objective, verbatim reports from one expert, without any interpretation or inclusion of a contradictory source. This raises a question regarding the current state of science writing.

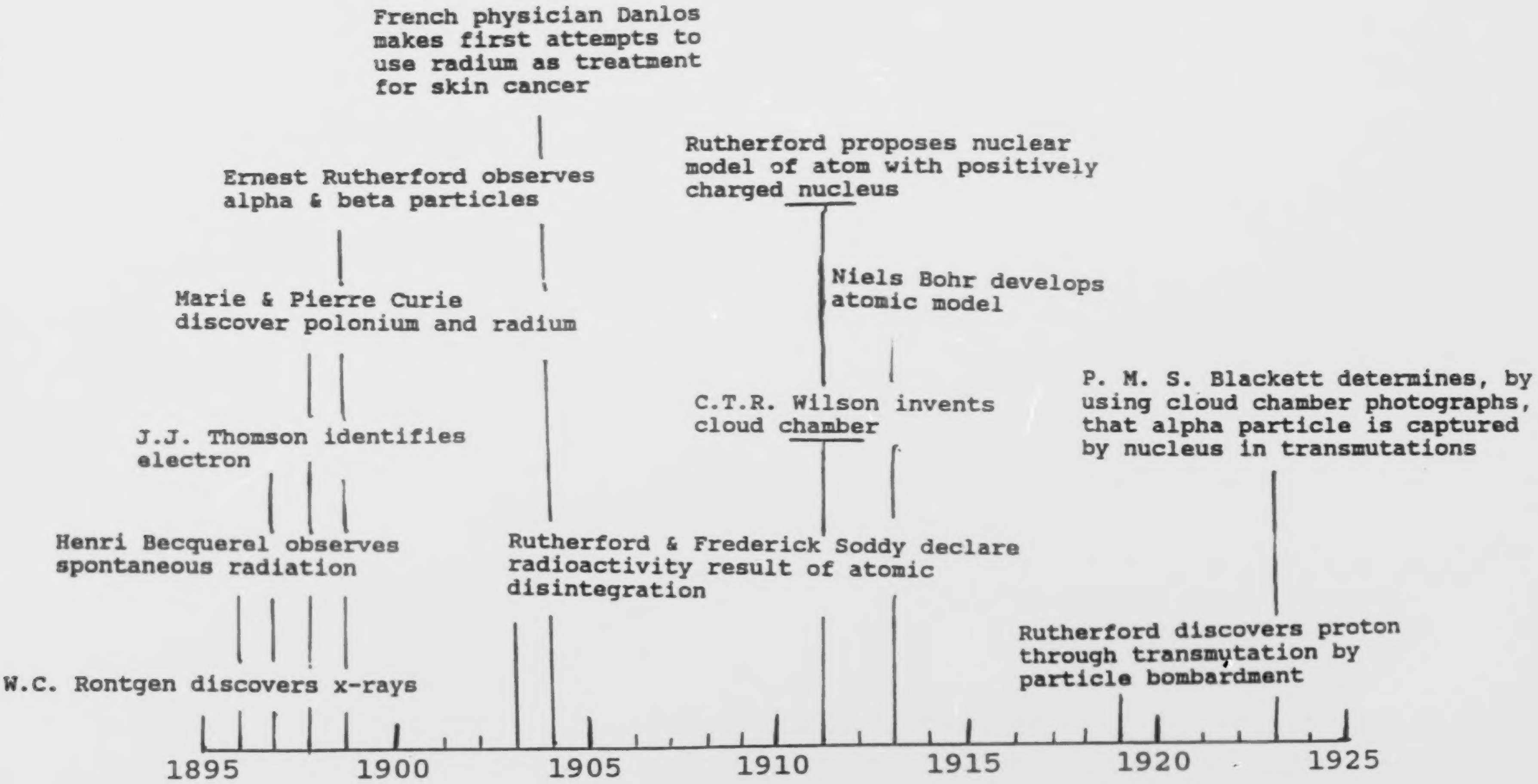
Sociologist Dorothy Nelkin wrote that current science writing is following the standards of more objective reporting, like that which dominated the field before the early 1970s. The era from about 1971 to about 1982 was the only period of science writing history in which interpretive writing was consistently prevalent.(58)

If it is remembered that many researchers agree that large numbers of the population get their science news from the print media, the question then becomes: If the trend of reporting science news verbatim continues, how will this affect the culture when dealing with the powerful effects of future science and technologies?

Further study in this area might compare science and technology coverage with that of business and/or national government during the same period. Additionally, more publications could be added to better study the effects of media competition on science coverage.



Graph #1: Total Stories Indexed for NYT and Science for years 1896–1922


French physician Danlos makes first attempts to use radium as treatment for skin cancer
Rutherford proposes nuclear model of atom with positively charged nucleus
Ernest Rutherford observes alpha & beta particles
Niels Bohr develops atomic model
Marie & Pierre Curie discover polonium and radium
P. M. S. Blackett determines, by using cloud chamber photographs, that alpha particle is captured by nucleus in transmutations
C.T.R. Wilson invents cloud chamber
J.J. Thomson identifies electron
Henri Becquerel observes spontaneous radiation
Rutherford & Frederick Soddy declare radioactivity result of atomic disintegration
Rutherford discovers proton through transmutation by particle bombardment
W.C. Rontgen discovers x-rays
1895
1900
1905
1910
1915
1920
1925

Timeline of Modern Atomic Theory

1895-1923

COVERAGE OF THE GENESIS OF ATOMIC THEORY

Periodicals: The New York Times and Science

Period: 1896 -1922

Table 1

Cross Tabulation of Subject Category and Headline Tone (NYT)

	Discovery	Medicine	Price/Supply	Energy	Military	Mult	Other	Totals
Positive	26.32%	48.94%	16.67%	0%	25%	33.33%	42.11%	36.59%
Neutral	73.68%	21.28%	83.33%	100%	50%	53.33%	57.89%	48.78%
Negative	0%	29.78%	0%	0%	25%	13.33%	0%	14.63%
Totals:	100%	100%	100%	100%	100%	100%	100%	100%
N=	(19)	(47)	(18)	(1)	(4)	(15)	(19)	(123)

Table 2

Cross Tabulation of Subject Category and Lead Tone (NYT)

	Discovery	Medicine	Price/Supply	Energy	Military	Mult.	Other	Totals
Positive	31.58%	46.81%	22.22%	0%	0%	40%	52.63%	39.02%
Neutral	63.16%	29.79%	77.78%	100%	75%	53.33%	47.37%	49.59%
Negative	5.26%	23.40%	0%	0%	25%	6.67%	0%	11.38%
Totals:	100%	100%	100%	100%	100%	100%	100%	100%
N=	(19)	(47)	(18)	(1)	(4)	(15)	(19)	(123)

Table 3

Cross Tabulation of Subject Category and Story Tone (NYT)

	Discovery	Medicine	Price/Supply	Energy	Military	Mult.	Other	Totals
Positive	31.58%	57.45%	44.44%	0%	0%	46.67%	52.63%	47.15%
Neutral	68.42%	19.15%	55.56%	100%	50%	46.67%	42.11%	40.65%
Negative	0%	23.40%	0%	0%	50%	6.66%	5.26%	12.20%
Totals	100%	100%	100%	100%	100%	100%	100%	100%
N=	(19)	(47)	(18)	(1)	(4)	(15)	(19)	(123)

Table 4

Cross tabulation of Subject Category and Story Tone (Science)

	Discovery	Medicine	Price/Supply	Energy	Military	Mult.	Other	Totals
Positive	20.69%	66.67%	16.67%	100%	–	14.29%	0%	26.92%
Neutral	75.86%	33.33%	83.33%	0%	–	85.71%	100%	71.15%
Negative	3.44%	0 %	0%	0%	–	0%	0%	1.92%
Totals:	100%	100%	100%	100%	100%	100%	100%	100%
N=	(29)	(6)	(6)	(2)	(0)	(7)	(2)	(52)

Graph #2: Tone of NYT Coverage for years 1896–1922

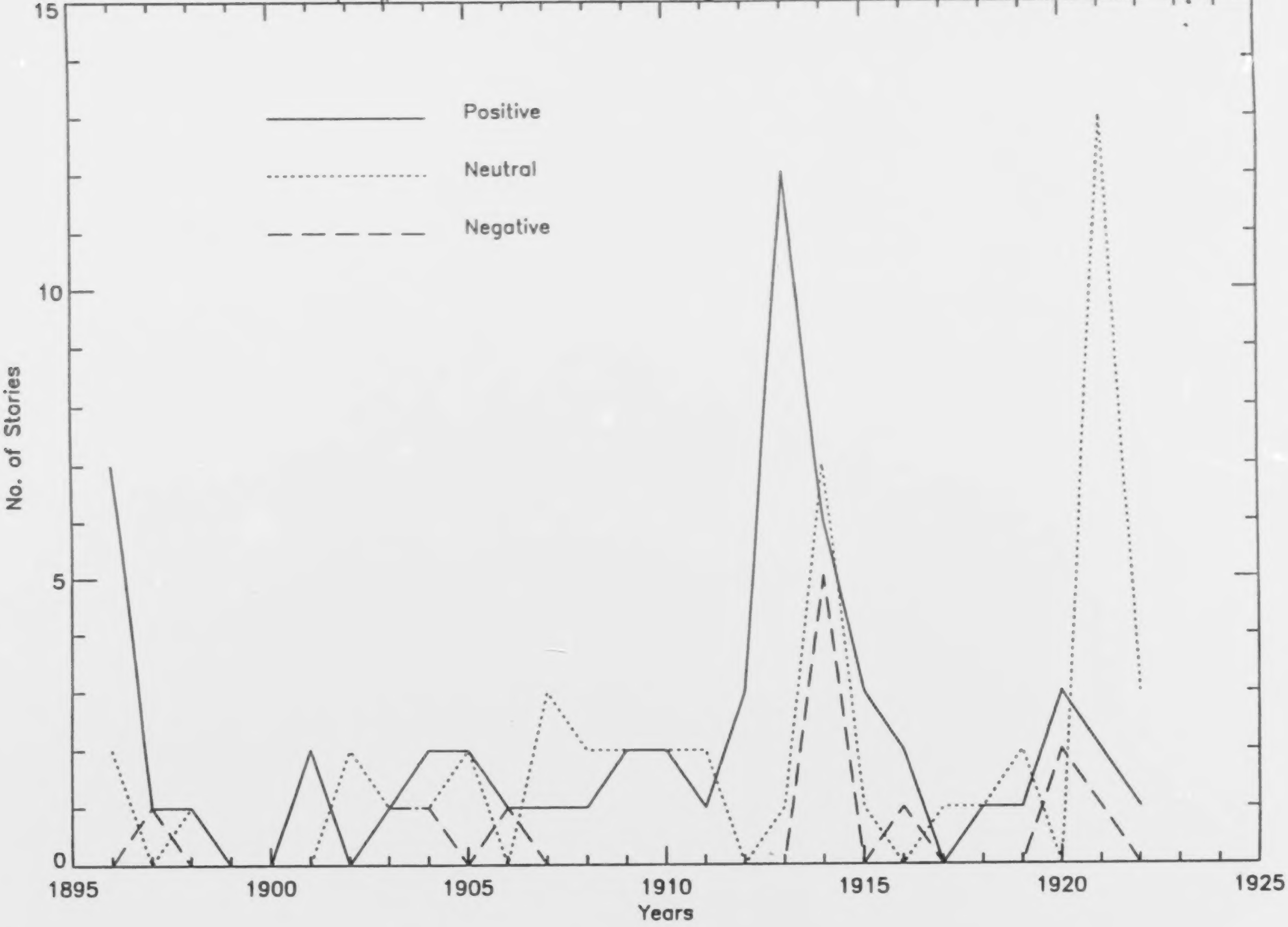


Table 5

Number of Sources for the New York Times

No Source	35
Government	13
Academic	33
Medical	38
Industry	8
Science Writer	1
Patient	1
Inventor	1
Multiple	18

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45) *Science*, 31 October 1913, 612.

46) *The New York Times*, 20 July 1919, 9.

47) The New York Times, 18 September 1919, 13.

48) The New York Times, 18 September 1919, 13.

49) Science, 24 October 1919, 388.

50) Science, 21 November 1919, 467.

51) The New York Times, 18 May 1921, 17.

52) The New York Times, 20 May 1921, 3.

53) Science, 1 July 1921, 1.

54) The New York Times, 13 November 1922, 17.

55) The New York Times, 28 December 1922, 4.

56) Eventually Ramsay's transmutation was further explored by Marie Curie's daughter Irene, who generated knowledge that eventually led to the practical utilization of nuclear energy. (Taton, p. 218) The ether, though still discussed, fell from favor as it was realized that the energy rays could travel independently through space without any supporting force such as an ether.

57) Weart, 52.

58) Nelkin, 97.

EMBARGOED UNTIL WEDNESDAY, JUNE 12, 1991
AFTER 10 am

WOMEN, MINORITIES, AND AIDS

An Analysis of Issue-Responsive Programming
Among Philadelphia, Pennsylvania Commercial Radio Stations
1989-1990

A Study by the Philadelphia Lesbian and Gay Task Force

June 12, 1991

Roger N. Johnson, Ph.D.
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Women, Minorities, and AIDS

An Analysis of Issue-Responsive Programming
Among Philadelphia, Pennsylvania Commercial Radio Stations 1989-90

Abstract

This Study examines issue-responsive programming on the nineteen leading Philadelphia commercial and non-commercial radio stations over a two year period (1989-90). The data analyzed came from quarterly issue program reports that each station must prepare and compile under FCC rules. A content analysis examined the following categories: Women, African-Americans, Latino and Latina people, Asian-Americans, Lesbian women and Gay men, Jewish people, the handicapped, and other minorities (such as Native Americans, the elderly, White ethnic minorities, or religious minorities), unspecified minorities (minority issues which mention no particular minority), health, AIDS, and children. The performance of each station was measured by (a) the number of programs, and (b) the durations of programs.

The 19 stations examined individually and collectively were entertainment and music stations WDAS-AM/FM, WEAZ-AM/FM, WEGX-FM, WFLN-FM, WHYY-FM, WIOQ-FM, WIP-AM, WMGK-FM, WMMR-FM, WOGL-FM, WPEN-FM, WUSL-FM, WXTU-FM, and WYSP-FM. Talk radio stations WHAT-AM and WWDB-FM as well as all-news station KYW-AM were analyzed separately. WHYY-FM is a public radio station.

The findings reveal that the average music and entertainment station in Philadelphia devoted *less than one percent of its total air time to issue-responsive programming.* Less than one-third of reported issue-responsive programming was devoted to women and minorities overall, and to the coverage of AIDS, a pressing public health concern. On the average, Philadelphia radio stations devoted *one minute a day* to women and to African-Americans and about *2 minutes a month* to Lesbian and Gay people as well as to Latino and Latina people. There was very little coverage of other minorities and about one program every two months about AIDS. Poor coverage of women and minorities was also found in the news and talk radio stations.

The analysis was made difficult by the fact that many of the stations failed to provide complete information about their own programming as required by law. Some stations broadcast little more than 10-15 second Public Service Announcements [PSA's]. A common practice among many stations was to place their reported issue-responsive programs in the "graveyard" of 12-6 AM or else in the early morning hours. The vast majority of regular public affairs programs were broadcast early Sunday mornings.

The total effect [of commercial radio], as judged in terms of educational value, is one of terrible destruction. The radio . . . is not cultivating those qualities of taste, of reasoned judgment, of integrity, of loyalty, of mutual understanding upon which the enterprise of self-government depends. On the contrary, it is a mighty force for breaking them down.

Alexander Meiklejohn (1948)

Introduction

The history of radio broadcasting in the United States is a history of controversy. The federal government first became interested in radio when it passed the Wireless Ship Act of 1910 which required the navy and merchant marine to install wireless transmitters on all passenger ships. Two years later this act was amended so that anyone who wanted to broadcast or receive messages had to register with the government. By World War I, over 8,500 individuals were licensed. The results were chaotic. The U.S. Navy wanted to solve the problem by creating a radio monopoly under its control so that it could regulate who could broadcast on what frequencies.

By the early 1920s, everyone was clamoring for government regulation. Even the National Association of Broadcasters, founded in 1923, lobbied for government control. President Herbert Hoover held numerous conferences in the hopes that the radio industry could regulate itself with minimum government involvement. President Calvin Coolidge finally had to suspend all new license applications, and in 1927 Congress passed the Radio Act which created the Federal Radio Commission under the jurisdiction of the Department of Commerce.

Although some argued that freedom of speech meant that anyone should be free to broadcast, most felt that broadcasting required government regulation. There is an almost unlimited supply of paper and ink, but broadcast frequencies are limited in number. These frequencies were considered to be the property of the American people. The Federal Radio Commission was given the task of allocating licenses, supervising broadcasting practices, and looking out for the public interest. The Commission was charged with the responsibility of providing "fair, efficient, and equitable service" to the nation. The Radio Act of 1927 became a model for government communications policies. One of its key provisions was to require radio stations to "broadcast in the public interest, convenience, or necessity." A few years later, the Communications Act of 1934 went even further to regulate the broadcast industry. The 1934 legislation created the Federal Communications Commission (F.C.C.) as a special agency under Congress. Today, the F.C.C. continues to regulate not only radio and television, but also telephone, telegraph, and satellite telecommunications.

The F.C.C. was prohibited from censoring the content of programs. Instead, it exercised its power by requiring regular license renewal applications. Stations which failed to perform in the public interest could have their license revoked.

Unfortunately, this power was never taken very seriously by the F.C.C. Within a few decades, the Commission acquired a reputation of being a rubber stamp for the broadcast industry. According to Whetmore (1987), F.C.C. Commissioners have reviewed over 60,000 license applications since 1954 but revoked only a very few. Some have argued that the F.C.C. has used its power to defend the industry rather than to defend the public.

Deregulation. In the 1980s, the Reagan administration brought deregulation to the F.C.C. Radio was deregulated in 1981 and television followed in 1984. Mark Fowler, appointed Chairman of the F.C.C. by President Reagan, held the view that broadcast stations should be free to operate in their own interest. He felt that the primary function of the F.C.C. was to award licenses and to assign broadcast frequencies. Chairman Fowler once suggested that licenses should be allocated according to who could bid the highest price. (The idea of awarding licenses to the highest bidder was recently resurrected under the Bush administration.) Dennis Patrick, Fowler's successor as F.C.C. Chairman, continued and amplified the deregulation policies. The following are some of the highlights of deregulation and their impact on broadcasters and on the public.

(a) The Fairness Doctrine was eliminated under deregulation. This doctrine required broadcasters to air controversial issues and to present opposing view points.

(b) Deregulation ended the requirement that television stations must hold their license for a minimum of three years. This regulation had been intended to curb speculative purchasing and selling of stations.

(c) The Commission ended the right of the public to have access to program logs maintained by stations. Access to these logs were necessary in order to conduct a full evaluation of broadcast performance.

(d) The requirement that stations maintain logs of what they broadcast was also eliminated.

(e) The Commission ended the requirement that stations initiate formal ascertainment of the needs and interests of the community in which the station is licensed. Deregulation allowed broadcasters to determine community needs informally any way they wished.

(f) Deregulation ended requirements that stations must broadcast a minimum percentage of broadcast time to news and public affairs, non-entertainment programs, and locally-produced programs. Previously, radio stations were required to broadcast no less than 8% (and TV stations no less than 20%) of non-entertainment programming. These requirements were intended to assure some minimum contribution to the public interest and to support the goal of programming diversity.

(g) Deregulation ended guidelines on the commercialization of programs. These guidelines previously protected the public, especially children, from over commercialization.

(h) Deregulation eliminated the requirement that broadcasters submit a long form renewal application which described broadcasters' public interest programming.

(i) Deregulation promoted monopolistic station ownership by relaxing the rules which limited the number of stations which could be owned by a single corporation. The purpose of the old rule was to insure a diversity of voices, rather than a monopoly. Under the new rules, a single owner can control as many as 36 television and radio stations.

Monopolistic control of the public airwaves has generally meant the exclusion of women and minorities from ownership, decision making, and programming. The exclusion of minorities is evidenced by the fact that only about two percent of radio stations and three percent of television stations in the United States are minority-owned.[1]

In carrying out its new deregulation policies, the F.C.C. stated unequivocally that deregulation did not constitute a retreat from its Congressional mandate to oversee the broadcasting performance of the stations it licensed. The F.C.C. maintained that radio broadcasters would be required to be responsive to the issues facing significant elements of their community of license, and stressed that each individual station would be liable for its failure to discuss issues of interest and concern.

Just what is the public interest? At a 1983 hearing in Washington, Chairman Fowler defined 14 elements of programming necessary to meet the public interest and the needs of the community: (1) opportunity for local self-expression, (2) development and use of local talent, (3) programs for children, (4) religious programs, (5) educational programs, (6) public affairs programs, (7) editorials by licensees, (8) political broadcasts, (9) agricultural programs, (10) news programs, (11) weather and market reports, (12) sports programs, (13) service to minority groups, and (14) entertainment programs.

The F.C.C. has stated that it will rely not only on what stations say

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1. A summary of Philadelphia, PA radio station's ownership profiles and employment records is available separately.

about themselves, but they will also rely on the public to inform them if broadcasters fail to address the public interest. In order to determine whether stations have addressed the public interest, all stations are required to compile quarterly issue program reports which summarize what community issues were given significant treatment during the previous 3 month period. These reports must contain the following:

1. **A discussion of how each issue was treated;**
2. **A program description listing the (a) time, (b) date, and (c) length of each program;**
3. **The program title**
4. **The type of programming which treated the issues**

Based on an examination of these quarterly issues program reports available in stations' public files, the two Philadelphia studies described below were carried out with the objective of providing detailed information about what Philadelphia TV and radio stations broadcast in the public interest.

The Philadelphia TV Study. In July of 1989, the Philadelphia Lesbian and Gay Task Force issued a report entitled "Whose Public Interest?: A Study of Attention to Women, Minorities, and AIDS in Issue-Responsive Commercial Television Programming." This study analyzed the quarterly issues program lists for three commercial VHF stations (KYW-TV, WPVI-TV, and WCAU-TV) and three commercial UHF stations (WPHL-TV, WTXF-TV, and WGBS-TV) for 1986-1988. The Study found that all stations devoted less than 5.2% of their broadcast time to issue-responsive programming. Most stations devoted less than 1.0% of annual broadcast time to issue-responsive programming. The study concluded that the F.C.C.'s free marketplace theory failed to serve the interests of women and minorities. The Task Force, with other community organizations, filed a Petition to Deny Relicensure based on the poor performance of the TV stations.± On June 29, 1990, the F.C.C. dismissed the marketplace Petition to Deny Relicensure and granted license renewals to each of the six stations without calling for evidentiary hearings. In September of 1990, the Task Force filed a Petition for Reconsideration with the Commission which is still pending.

The Philadelphia Radio Study. The current study is an outgrowth of the television study. It is an attempt to provide a detailed, objective, and quantified analysis of how each Philadelphia commercial radio station addresses community needs and the public interest. In particular, it focuses on what the Federal Communications Commission refers to as

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2. Petition to deny Philadelphia, PA Commercial Television License Renewal Applications, filed July 3, 1989 by the Philadelphia Lesbian and Gay Task Force, the Office of Communication of the United Church of Christ; Congreso de Latinos, Unidos; Pennsylvania NOW; and the Philadelphia Association of the Southeastern Conference of the United Church of Christ.

"Issue-Responsive Programming." The study is based on two years of programming effort (1989-1990) with the raw data supplied by each station in its own quarterly issues reports which detail how it served the public.

Methodology

The Stations. The 19 stations chosen for inclusion in this study were selected from the 47 stations that media guides list for the greater Philadelphia area. The sample chosen eliminated religious stations (such as WCHR, WEEE, WTMR, WKDN-FM, WIBF-FM, and WZZD), college stations (such as WRTI and WXPN), and educational stations (such as WPEB-FM and WRDV-FM). Stations requiring a special receiver (Radio Information for the Blind) and stations not broadcasting in English (KABC, WPHE, and WTEL) were also eliminated from the sample.

The final list of 19 stations includes the top 10 in Philadelphia. The list of stations can be seen in Table 1. WEAZ-AM and FM are counted as two stations since they occupy different broadcast frequencies and reach different audiences.

These stations vary considerably in format. While most of the stations offer primarily music and entertainment, KYW-AM is an all news station and WWDB-FM and WHAT-AM are talk radio stations. For issue-responsive programming, some stations generate regular public affairs programs while others broadcast only 10-15 second Public Service Announcements (PSAs). Some stations concentrate their issue-responsive programming in the "graveyard" time block (midnight to 6 AM when few people are listening) while others distribute them throughout the day.

For purposes of analysis, the 19 stations were divided into two groups. The three news and talk radio stations were analyzed separately since their format of 24 hours of continuous discussion makes them quite different from the stations which are primarily oriented toward music and entertainment. The remaining 16 music and entertainment stations were analyzed individually but also averaged together to provide composite picture. When reference is made to the *number of programs* on the "average Philadelphia radio station," this refers to the composite of these 16 stations. When *program duration* measures are used, the average is based on 15 stations. This is because program duration measures were not available for WFLN-FM which accordingly had to be eliminated from the averages.

Quarterly Issues Program Lists. All told, about 6,000 programs were analyzed. These programs came from the quarterly issues programs reports prepared by each station. These were variously called "public affairs," "community issues," "significant problems," "most significant problems," "community concerns," and "public service announcements."

Although all stations are required to keep accurate quarterly issues program lists (see the discussion above), many stations were quite sloppy about their record keeping. The information provided was sometimes fragmentary, incomplete, uncodeable, or missing altogether. For example, the PSAs on WYSP-FM were uncodeable for lack of full information. Complete program duration information for WFLN was lacking which meant that this station had to be deleted from averages involving measurement of time devoted to issue-responsive programming. WHAT-AM did not have usable quarterly issues reports for the second and third quarters of either 1989 or 1990. WIOQ-FM, WMMR-FM and WDAS-AM/FM also failed to provide complete or adequately documented quarterly issues reports. Thus, while some stations provided relatively complete reports, others submitted less than professional efforts which failed to accurately document their reported issue-responsive broadcasting. Appendix 3 describes each station's reporting practices. Table 6 summarizes how each station complied (or failed to comply) with quarterly issues program listing requirements.

It is difficult to judge whether poorly-prepared quarterly issues reports are the result of faulty record keeping, the lack of staff members with the ability to prepare such reports, unwillingness to commit resources to do the job properly, the desire to conceal poor performance, or a disregard for the public interest and the law.

In general, stations were quite generous to themselves in what they considered "issue-responsive programming." WFLN-FM for example, invites a guest to host an hour of classical music every Thursday at 3 PM. This hour is counted as an hour of "community service." The talk radio (WWDB-FM and WHAT-AM) and all news stations (KYW-AM) like to claim that everything they broadcast is issue-responsive.

For the purpose of this study, what the stations claimed as "issue-responsive" was counted, regardless of how irrelevant the content sometimes appeared. The term "reported issue-responsive" makes it clear that reference is being made to programs characterized by the stations themselves rather than by any independent and objective analysis of what the programs actually contained.

Time Frame. The period of time analyzed was two consecutive years, 1989-1990. This extensive period of time provides a sample more than adequate to make an accurate determination of station performance. Except for the stations noted above which failed to make all complete reports available, most stations provided complete sets of 8 quarterly reports. Another exception was WEAZ-AM and FM which is counted only after they began simulcasting on May 10, 1989. The news and talk radio stations were analyzed for a 12 month period (explained in more detail below).

Coding Categories. All programs were coded according to information provided by the stations in their quarterly issues program reports. "Programs" included all locally-produced and network or syndicated programs. The primary categories coded were (a) Women, (b) African-Americans, (c) Latino and Latina people, (d) Asian-Americans, (e) Lesbian and Gay people, (f) Jewish-Americans, (g) handicapped people, (h) other minority groups (such as native Americans, white ethnic minorities, or religious minorities), (i) unspecified minorities (discussions about minority issues while fail to mention any particular minority), (j) medical or health issues, (k) AIDS, (l) children. Additionally, each item on each page of each quarterly issues report was coded by (a) station, (b) date, (c) time of broadcast, (d) duration of broadcast.

Several criteria were used to categorize programming that reflects minority concerns, issues, and/or experiences. A primary criterion for inclusion in a particular group was that the reference to a specific minority had to be explicit. Program descriptions that did not mention a specific minority but did address such questions as heterosexism, sexism, racism, anti-semitism, aging, and other forms of oppression were included in appropriate categories. In addition, programs that reportedly dealt with anti-gay or anti-lesbian violence, racially motivated violence, rape, and domestic violence, were also placed in the appropriate category. Programs that dealt with minority concerns without mentioning any specified minority were counted as non-specified minorities. Programs that addressed general issues such as crime, drugs, or illiteracy were not counted minority-oriented unless there was specific reference to particular groups or the concerns or experiences of minorities.

Coding Procedure. Two trained coders independently analyzed all of the raw data supplied by each station and converted these data into numeric codes. All issue-responsive programming was counted regardless of its content.

Inter-coder reliability for the two independent coders was calculated to be 97.6%, thus indicating very little disagreement about how programs should be categorized according to topic. A detailed coding protocol describing all definitions and coding instructions is available from the Philadelphia Task Force.

Performance Measures. The two primary performance measures used to evaluate station performance were (a) the number of programs or program segments; (b) the duration of these programs. All program durations were rounded off to the next higher minute. The minimum program duration coded was one minute, even for very short "programs," such as 10 second PSAs. Program segments which covered two or more categories (for example African-American women) would receive multiple counts (in this case, once for women, another time for African-American).

The analysis counts original programs but not repeats. Most stations did not use repeats, and it would be inaccurate and unfair to count the repeats that some stations used as if they were new and different programs. Another problem with counting repeats is that some stations did not provide enough information for analysis. For example, it is impossible to accurately cite a program which is listed as "repeated at various times." Only a few stations (WDAS-FM, WUSL-FM, WFLN-FM, and WOGL-FM) repeated material regularly. Only one (WXTU-FM) made extensive use of repeats. In most cases, the repeats were short segments or PSAs. WOGL-FM was an exception since it repeated programs of longer duration. It should be pointed out that stations which used frequent repeats for PSAs already had overinflated measures of duration because a minimum of one minute was assigned to every segment no matter how short. For example, 60 PSAs of 10 seconds each would be counted as 60 minutes when in fact they were only 10 minutes in total time. [A separate analysis of repeats can be found in the Addendum.]

Performance for time and frequency are presented as mean (average) minutes per month or programs per month. Although it might be more conventional to use hours and weeks, the programming was so minimal that such measures would have been inappropriate. (For example, on the average, stations allocated only 0.38 hours per week to women and minorities, a figure which is better expressed as 90.5 minutes per month.)

Results

The results are presented in terms of data for the 19 individual stations (Tables 1-5) and in group means (Fig. 1-3) for the 16 music and entertainment stations.

Number of Programs. Over a two year period, Philadelphia radio stations averaged *18.4 programs per month of issue-responsive programs.* This figure represents a mean of all 16 music and entertainment stations. Thus, a listener in Philadelphia would hear a program dealing with community issues or public affairs slightly more often than once every other day. Among the 18.4 issue-responsive programs per month, only 4.7 of these deal with women, gay and lesbian people, minorities, or AIDS. The Philadelphia listener would hear these topics discussed on the average of a little more often than about once a *week*.

The average number of programs for each specific category for each individual station is summarized in Tables 2, 4, and 5. Table 2 shows that two stations (WDAS-FM and WIOQ-FM) report less than one issue-responsive program per week. Stations that offer less than one program per week addressing women and minorities overall include WDAS-AM, WDAS-FM, WEGX-FM, WFLN-FM, WHYY-FM, WIOQ-FM, WIP-AM, WMGK-FM, WMMR-FM, WOGL-FM, WPEN-AM, WYSP-FM, and WWDB-FM. *In short, over two-thirds of the Philadelphia stations fail to broadcast even a single program a week devoted to women or minorities.*

Given the poor performance of all of the stations, it would not be appropriate to label any of the stations as "best."

Program Duration. In addition to analyzing the *number* of programs, the amount of time devoted to reported issue- responsive programming was also analyzed. Both measures portrayed a similar pattern of neglect.

Figure 1 illustrates the fact that reported issue-responsive programming represents less than one percent (0.8%) of total air time on the typical Philadelphia radio station. If this tiny slice is broken down further, it can be seen that only 31% addresses the concerns of women, racial and ethnic minorities, the lesbian and gay population, and the subject of AIDS. *Put another way, two-thirds of reported issue-responsive programming does not address these important topics.*

Figure 2 shows how much time is allocated to each of the 11 categories of analysis. Some of the categories have so little coverage (even when using a monthly rather than daily or weekly average) that they appear almost as zeros on the graph. When compared to total broadcast time (Fig. 3), all eleven categories appear as zeros.

Data for time-based measures for individual stations are summarized in Tables 1, 3, and 5. Table 1 indicates that four stations (WEAZ-AM/FM, WIOQ-FM, and WXTU-FM) report less than one hour per *month* devoted to women and minorities, inclusively. Five other stations(WDAS-FM, WHYY-FM, WIP-AM, WMMR-FM and WOGL-FM) present just over an hour. The quantitative summaries for program durations for each of the eleven categories for each station are summarized in Table 3.

Among the 15 music and entertainment stations analyzed, an average of only 343.9 minutes (5.7 hours) per *month* of overall issue-responsive programming was reported.

Thus, someone listening 24 hours per day to the average Philadelphia radio station would hear only 11.3 minutes dealing with community issues and public affairs. (The total air time is adjusted for WHYY which broadcasts only 19 hours per day.)

For programming dealing with women, racial and ethnic minorities, lesbian and gay people, and the subject of AIDS, *the average station offers* *less than two hours (106.8 minutes) per month.* Thus, someone listening 24 hours would hear less than four minutes per day on these issues.

Coverage of Women. According to the latest PMSA (Philadelphia Primary Metropolitan Statistical Area), women are 52% of the total population [3,354,870]. The average Philadelphia music and entertainment station reports only 1.2 programs per *month* which deal with women's issues. Table 4 reveals that not one station serving Philadelphia (including the news and talk radio stations), reports the broadcast of a single program per week on the average devoted to the concerns of women. One station (WDAS-FM) reported *not a single program in two years* devoted to women. Five stations that average less than one program per month include (in addition to WDAS-FM): WDAS-AM, WFLN-FM, WIOQ-FM, and WOGL-FM. Three stations WHYY-FM, WIP-AM, and WMMR-FM broadcast only about one program per month about women.

Using time as a measure of performance (Table 3), WUSL FM, which reports the highest level of attention to women, reports less than an average of *one hour* per month of coverage. The worst coverage of women comes from WDAS-FM and WEAZ-AM/FM. Although women are the majority population, Philadelphia radio stations reported 0.0007% of their broadcast time to cover women's issues. Put another way, the community of license can expect to hear one minute per *day* of issue-responsive programming about women.

Coverage of African-Americans. According to the latest PSMA (Philadelphia Primary Metropolitan Statistical Area), African-Americans are 19% of the Philadelphia area population (929,907). Philadelphia music and entertainment radio stations air an average of less than one program *per month* (0.9 to be exact) for its largest racial minority. The worst record by far came from station WFLN-FM. Out of 293 PSAs aired over a two year period, only one dealt with African-Americans. Table 4 shows that 13 of 16 stations [81%] stations reported an average of about one program per month or less to African-American issues and concerns including: WDAS-FM, WEAZ-AM/FM, WEGX-FM, WIOQ-FM, WIP-AM, WMGK-FM, WMMR-FM WOGL-FM, WPEN-FM, WWDB-FM, WXTU-FM and WYSP-FM.

In terms of time (Table 3), seven stations allocating less than 10 minutes per month to African-Americans include WEAZ-AM/FM, WEGX-FM, WIOQ-FM, WIP-AM, WMMR-FM and WXTU-FM. Although a time analysis could not be done for WFLN-FM due to the way the station prepared its quarterly issues statement, the station would appear to average 0.04 minutes per month (a single PSA counted as one minute in a 24 month period).

The nearly one million Americans of African descent living in the

Philadelphia region can count on about one minute per day of overall issue responsive programming from the average Philadelphia radio station.

Coverage of Latina and Latino People. According to the PSMA, Hispanic people are 4% of the greater Philadelphia area population (173,980). This growing ethnic minority population can expect 2.2 minutes per month and about one program per *year* of issue responsive programming (0.1 per month). Table 4 shows that eleven stations (WDAS-AM/FM, WEAZ-AM/FM, WFLN-FM, WHAT-AM, WIP-AM, WMMR-FM, WYSP-FM, WWDB-FM, and WXTU-FM) totally neglected programming about Latino and Latina people.

Coverage of Lesbian Women and Gay Men. Distributed throughout all populations, Gay men and Lesbian women represent about ten percent (10%) of the general population in the Philadelphia area, or about 641,160 people. Only 0.6% of reported issue-responsive programming addresses issues of concern to the lesbian and gay community (Fig. 1). Table 4 reveals that 8 of the 19 Philadelphia radio stations studied totally neglected programming about gay men and lesbian women including: (WDAS-AM/FM, WHAT-AM, WIOQ-FM, WMGK-FM, WOGL-FM, WPEN-AM and WXTU-FM). The 15 Philadelphia music and entertainment radio stations average only 2.2 minutes and 0.1 programs *per month* of coverage.

Coverage of Other Minorities. Coverage of all other minorities and minority issues (including Asian-Americans, Jewish-Americans, Native Americans, White ethnic Americans, the elderly, and the handicapped) are similarly neglected. All of these groups receive 3.3 programs and 7.0 minutes per *month* of programming.

Coverage of AIDS. AIDS is a growing public health concern to everyone. More than 100,000 people have died from this disease. Yet the 16 Philadelphia radio stations average about one program every two months (0.6 per month). The average music and entertainment station presented only about 12.2 minutes of programming per *month* about AIDS. There is considerably more information presented on other health and medical topics, but only 17% of the health programs and 19% of the time devoted to health is AIDS-related. Time wise, only 0.00005% of air time on the 15 Philadelphia stations is allocated to discussion of AIDS.

Excepting WEAZ-AM/FM and WUSL-FM, not one of the radio stations analyzed (including the news and talk radio stations) averaged even one program per *month* about AIDS. Eight stations (WDAS-AM/FM, WEGX-FM, WFLN-FM, WIOQ-FM, WIP-AM, WMMR-FM, and WWDB-FM) averaged four or fewer programs a year. Data for each station can be seen in Table 5.

News and Talk Radio. Since all-news and all-talk radio stations present commentary 24 hours a day, it is not appropriate to average them with stations that present primarily music and entertainment. Because of the continuous talk format, it might be expected that these stations would have many programs and comparatively large amounts of time devoted to public affairs and community concerns. This turned out not to be the case, and in some measures these stations performed worse than some of the music and entertainment stations.

Quarterly issue reports for news and talk radio stations are normally much more extensive than entertainment stations because of the format. KYW-AM provided extensive reports, however the manner in which they were prepared made it impossible to analyze the amount of time devoted to specific categories. Many entries fail to state when programs were aired or how long they lasted. Instead, KYW-AM repeatedly referred to "various times, various durations." WWDB-FM did mention both air time and duration, but its report was considerably less extensive (primarily because WWDB-FM had one-fifth as many reported issue-responsive programs as KYW-AM). Both stations were analyzed for a full year (1990).

WHAT-AM was analyzed for 12 months. The period of analysis was the first and fourth quarters of 1989 and 1990. (WHAT-AM did not have complete reports for the second and third quarters of either year). Although this station had about the same number of reported issue-responsive programs per month as KYW-AM, its programs often ran an hour or more so the times reported for WHAT-AM are by far the most of any Philadelphia station.

Table 1 shows the average minutes per month that each Philadelphia station says it devotes to issue-responsive broadcasting. It can be seen that between the two talk radio stations,WHAT-AM has considerably more reported issue-responsive programming than WWDB-FM.

For coverage of women and minorities, WHAT-AM also easily surpasses WWDB-FM by a margin of 4 to 1 (Table 1).
It also exceeds the performance of WWDB-FM in most other categories *except* for covering lesbian women and gay men where WHAT-AM offers *no* programming at all (Table 3). WWDB-FM broadcasts an average of 25 minutes a month of stories related to gay and lesbian issues. *Neither station offers any coverage of Latino and Latina people.*

In terms of the the number of issue-responsive programs, WEAZ-AM-FM exceeds all three news and talk radio stations (Table 2). This figure, however, is primarily due to the large number of PSAs used by WEAZ-AM/FM.

KYW-AM far exceeds both talk radio stations and all other Philadelphia stations, except WEAZ-AM-FM, in the average number of reported issue responsive programs (Table 4). At the same time, KYW-AM, one of two Westinghouse-owned local radio stations, allocates the *lowest percentage of its issue-responsive programming to women and minorities* compared to all other Philadelphia stations except WEAZ-AM/FM which is about the same. By comparison, minority-owned WHAT-AM has one of the *highest percentages of reported issue-responsive programs devoted to women and minorities* (Table 2). In the other categories as well (Table 4), KYW-AM has more reported programs than other stations, but this is mainly because it is an all-news station with more reported issue-responsive programming. KYW-AM's effort, as measured by the percentage of issue responsive programming devoted to various categories is not much better (and in some cases worse) than other stations. For example, Table 4 reveals that 12 other stations devote a higher percentage of issue-responsive programming to African-Americans than does KYW-AM. WMMR-FM, Westinghouse's second radio station in the Philadelphia market, is the *fourth worst* of all 19 stations in terms of average programs per *month* devoted to women and minorities.

With regard to AIDS, WWDB-FM once again ranks as the worst of the three news-talk programs. There are only 3 other stations in Philadelphia (WDAS-AM, WEGX-FM, and WIP-AM) which have less coverage of AIDS (Table 5). Four stations WDAS-AM, WFLN-FM, WIOQ-FM and WMMR-FM devote as little programming to AIDS as WWDB-FM.

Thus, *it would appear that the vast majority of the 24 hours per day devoted to news or talk is unrelated to the topics discussed in this report.* For stations that "talk" 24 hours per day, why is it that KYW-AM averages a program about women and minorities only once every three days? WHAT-AM does about the same, and for WWDB-FM there is only one story about every week-and-a half. If WWDB-FM is "talking" 24 hours a day, why is 97% of the chatter unrelated to concerns of the community?

Public Service Announcements. One variable which has a substantial influence on the total number of programs (but not the total duration) is Public Service Announcements. These brief messages are usually 10-15 seconds and sometimes a bit longer. Most stations use them sparingly or not at all, however some stations make heavy use of PSAs. Three stations discharge almost their entire public interest programming with PSAs and offer little else. These stations are WEAZ-AM/FM and WFLN-FM. PSAs on WEAZ-AM/FM occupy 95% of the station's effort with regard to reported issue-responsive programming. For WFLN-FM, the figure is 93%. Another heavy user of PSAs is WXTU-FM which relegates 76% of its reported issue-responsive programs to PSAs. Other stations which reported PSAs include WYSP-FM (33%),WEGX-FM (22%), KYW-AM (21%), and WDAS-FM (8%). No other station reported PSAs on their quarterly issues program reports. Reliance on brief PSAs should be kept in mind when examining data on the average number of programs.

Time Slot Analysis. The analysis above indicates that Philadelphia radio stations limit their community relations efforts by minimizing both the number of programs and the amount of air time devoted to public issues. Another way to sharply limit programming in the public interest is to present the programs at unpopular times when few people are listening.

Among regular public affairs programs lasting over one minute, 92% are aired on Sundays. Twenty-nine percent of these are aired in the "graveyard" time period of midnight to 6 AM. About half (48%) are broadcast between 6-9 A.M. with the remainder distributed throughout the day. Thus, the majority of public affairs programs are presented very early Sunday mornings when few people are listening. This practice is a clear indication that the stations feel no serious commitment to broadcast in the community interest.

A similar picture emerges by including all programs, even PSAs, devoted to women, racial and ethnic minorities, lesbian and gay people, and to AIDS. Among 1,401 programs analyzed in 1989-90 (all those where stations listed not only the program durations but also the program air time), 23% were broadcast during the graveyard time slot. Over half (55%) were aired very early in the morning between 6 and 9 A.M. The remaining 28% were aired between 9 A.M. and midnight. Nine stations, including WPEN-AM, WMGK-FM, WMMR-FM, WUSL-FM, WIOQ-FM, WOGL-FM, WYSP-FM, and WEAZ-AM/FM broadcast almost nothing between 9 A.M. and midnight. For some stations, their patterns were difficult to uncover since they failed to report air times on their quarterly issues program reports.

Conclusion

One of the purposes of the Communications Act of 1934 was to provide government regulation over the public air waves in order to assure diversity in programming as well as programming in the public interest. The deregulation of the 1980s subverted these national goals. Deregulation protected the industry from the public so that broadcasters could curtail programming in the public interest and pursue their main goal of maximizing profits.

From the point of view of the public, deregulation has been a failure. When left on their own, and when the F.C.C. rejects the voices of the public, broadcasters have repeatedly demonstrated that they will greatly reduce efforts to serve the public. Programming decisions are based more and more on self-interest rather than public interest.

This was clearly shown by the present study of 19 Philadelphia commercial radio stations. Using an objective, quantified analysis of programming over an extensive period of time (two years), it was demonstrated that (a) issue-responsive programming is a very minor part of total broadcasting (less than one percent), and (b) over two-thirds of this small proportion of issue-responsive broadcasting is unrelated to the needs of women, racial and ethnic minorities, lesbian women and gay men, or the national health crisis created by AIDS.

The lack of commitment to the Philadelphia public is demonstrated not only by the small number of programs and the meager allocation of time devoted to public affairs and community concern. It is also shown by (a) the pattern of airing issue-responsive broadcasting in the middle of the night or in early morning hours; (b) the pattern of airing public affairs programs early Sunday morning when few people are listening; (c) the pattern by some stations of producing few if any public affairs programs at all and instead relying on 10-15 second Public Service Announcements.

Finally, Philadelphia radio stations—like Philadelphia television stations—seem to take for granted their licenses to use the public air waves. This is demonstrated by the often incomplete and poorly-prepared quarterly issues reports which provide the basic measure of what each station is broadcasting in the public interest. Incomplete and poorly prepared reports, just like deficient programming, reveal a disdain for the public and for the process by which stations are granted licenses to serve the public.

Table 1: Reported Issue-Responsive Programming Time: Selected Philadelphia, PA Commercial Radio Stations—1989 and 1990

(Excepting WHYY-FM which is Public Radio)
Time Devoted to Women and Minorities Overall

STATION	FREQUENCY	FORMAT	MINUTES PER MONTH OF BROADCAST TIME 1	MONTHS STUDIED 2	MEAN MIN/MONTH OF ISSUE RESPONSIVE PROGRAMS [IRP] 3	% OF BROADCAST TIME DEVOTED TO IRP 4	MEAN MIN/MONTH DEVOTED TO WOMEN & MINORITIES 5	% OF IRP DEVOTED TO WOMEN & MINORITIES 6	% OF TOTAL BROADCAST TIME DEVOTED TO WOMEN & MINORITIES 7
KYW-AM[2]	1060	All News	43776	12					
WDAS-AM[1]	1480	Urban contemp. & gospel	43776	21	445.1	1.0%	193.4	43.5%	0.4%
WDAS-FM[1]	105.3	Progressive Soul	43776	21	156.6	0.4%	60.5	38.6%	0.1%
WEAZ-AM	560	Adult contemp.	43776	19.7	217.2	0.5%	31.4	14.5%	0.1%
WEAZ-FM	101.1	Adult contemp.	43776	Simulcast with WEAZ-AM					
WEGX-FM	106.1	Contemp. hits	43776	24	425.5	1.0%	90.8	21.3%	0.2%
WFLN-FM	95.7	Classical music	43776	24					
WHAT-AM[1,2]	1040	Talk radio	43776	12	3125.0	N/A	1060.0	33.9%	2.4%
WHYY-FM	90.9	Music, public radio '89-'90	34656	24	495.1	1.4%	72.0	14.5%	0.2%
WIOQ-FM	102.1	Contemp. dance	43776	18	118.3	0.3%	36.7	31.0%	0.1%
WIP-AM	610	Sports	43776	24	446.8	1.0%	72.5	16.2%	0.2%
WMGK-FM	102.9	Adult contemp.	43776	24	271.7	0.6%	100.0	36.8%	0.2%
WMMR-FM	93.3	Album rock	43776	21	264.0	0.6%	73.4	27.8%	0.2%
WOGL-FM	98.1	Music of 50s, 60s, 70s	43776	24	438.8	1.0%	80.0	18.2%	0.2%
WPEN-AM	950	Nostaglia	43776	24	298.8	0.7%	91.3	30.6%	0.2%
WUSL-FM	98.9	Urban-contemp.	43776	24	487.9	1.1%	266.1	54.5%	0.6%
WWDB-FM[2]	96.5	Talk radio	43776	12	1386.5	N/A	250.0	18.0%	0.6%
WXTU-FM	92.5	Contemp. country	43776	24	284.6	0.7%	48.4	17.0%	0.1%
WYSP-FM	94.1	Classic rock	43776	24	808.5	1.8%	139.0	17.2%	0.3%

1. Minority owned
2. News-Talk Radio

Source: Stations' Quarterly Issue Program Reports

Table 2: Reported Issue-Responsive Programs: Selected Philadelphia, PA Commercial Radio Stations—1989 and 1990

(Excepting WHYY-FM which is Public Radio)
Number of Programs Devoted to Women and Minorities Overall

STATION	MEAN OF REPORTED ISSUE RESPONSIVE PROGRAMS/MONTH [IRP] 1	MEAN PROGRAMS/MONTH DEVOTED TO WOMEN & MINORITIES 2	OF IRP PROGRAMS DEVOTED TO WOMEN & MINORITIES 3
KYW-AM	77.1	8.8	11.4%
WDAS-AM[1]	5.7	2.4	42.1%
WDAS-FM[1]	3.3	1.2	36.4%
WEAZ-AM	106.8	11.3	10.6%
WEAZ-FM	Simulcast with WEAZ-AM		
WEGX-FM	18.5	3.7	20.0%
WFLN-FM	12.2	2.7	22.1%
WHAT-AM[1]	24.1	8.3	34.4%
WHYY-FM	17.8	3.8	21.3%
WIOQ-FM	3.9	1.2	30.8%
WIP-AM	9.3	2.5	26.9%
WMGK-FM	9.2	3.3	35.9%
WMMR-FM	8.6	2.4	27.9%
WOGL-FM	10.9	2.0	18.3%
WPEN-AM	8.8	2.9	33.0%
WUSL-FM	22.7	10.3	45.4%
WWDB-FM	15.8	3.0	19.0%
WXTU-FM	35.2	6.1	17.3%
WYSP-FM	20.8	3.5	16.8%

1. Minority owned

Source: Stations' Quarterly Issue Program Reports

Table 3: Reported Issue-Responsive Program Time Selected Philadelphia, PA Commercial Radio Stations—1989 and 1990

(Excepting WHYY-FM which is Public Radio)

Time Devoted to Women; African-Americans; Latino/Latina; Lesbian/Gay; Non-Specific Minorities; Other Minorities[1]

STATION	MINUTES PER MONTH OF BROADCAST TIME 1	MEAN MIN/MONTH OF REPORTED ISSUE RESPONSIVE PROGRAM TIME [IRP] DEVOTED TO WOMEN 2	MEAN MIN/MONTH OF ISSUE RESPONSIVE PROGRAM TIME [IRP] DEVOTED TO AFRICAN-AMERICANS 3	MEAN MIN/MONTH OF ISSUE RESPONSIVE PROGRAM TIME [IRP] DEVOTED TO LATINO/LATINA 4	MEAN MIN/MONTH OF ISSUE RESPONSIVE PROGRAM TIME [IRP] DEVOTED TO LESBIAN/GAY 5	MEAN MIN/MONTH OF ISSUE RESPONSIVE PROGRAM TIME [IRP] DEVOTED TO NON-SPECIFIC MINORITIES 6	MEAN MIN/MONTH OF ISSUE RESPONSIVE PROGRAM TIME [IRP] DEVOTED TO OTHER MINORITIES 7
KYW-AM	43776						
WDAS-AM[2]	43776	27.4	147.4	2.9	0.0	4.3	22.9
WDAS-FM[2]	43776	0.0	60.6	0.0	0.0	2.7	0.0
WEAZ-AM	43776	8.5	1.8	0.0	0.2	1.5	17.3
WEAZ-FM	43776	Simulcast with WEAZ-AM					
WEGX-FM	43776	45.3	7.6	2.5	5.0	20.0	23.9
WFLN-FM	43776						
WHAT-AM[2]	43776	205.0	685.0	0.0	0.0	85.0	170.0
WHYY-FM	34656	23.7	34.1	3.0	7.5	5.2	5.6
WIOQ-FM	43776	18.3	6.7	1.7	0.0	0.0	18.3
WIP-AM	43776	31.9	5.0	0.0	2.5	1.9	31.3
WMGK-FM	43776	43.8	32.5	5.0	1.3	21.3	19.4
WMMR-FM	43776	34.1	8.6	0.0	5.7	11.4	26.4
WOGL-FM	43776	28.8	13.8	6.3	11.3	21.3	15.1
WPEN-AM	43776	43.8	27.5	3.8	1.3	22.5	18.9
WUSL-FM	43776	59.9	164.5	5.6	2.0	42.5	24.2
WWDB-FM	43776	117.5	17.5	0	25.0	15.0	100.0
WXTU-FM	43776	25.1	0.2	0	0.0	5.1	20.8
WYSP-FM	43776	36.9	24.8	2.5	5.0	16.0	45.8

[1] Other minorities include Asian-Americans, Jewish-Americans, the Elderly, the Handicapped and Children — Not Additive

[2] Minority owned

Source: Stations' Quarterly Issue Program Reports

Table 4: Reported Issue-Responsive Programs: Selected Philadelphia, PA Commercial Radio Stations—1989 and 1990

(Excepting WHYY-FM, which is a Public Radio Station)

Number of programs devoted to Women; African-Americans; Latino/Latina; Lesbian/Gay; Non-specific Minorities; Other Minorities[1]

	MEAN REPORTED ISSUE RESPONSIVE PROGRAMS [IRP]/ MONTH 1	MEAN IRP PROGRAMS DEVOTED TO WOMEN 2	% OF IRP DEVOTED TO WOMEN 3	MEAN IRP PROGRAMS DEVOTED TO AFRICAN-AMERICANS 4	% OF IRP DEVOTED TO AFRICAN-AMERICANS 5	MEAN IRP PROGRAMS DEVOTED TO LATINO/ LATINAS 6	% OF IRP DEVOTED TO LATINO/ LATINAS 7	MEAN IRP PROGRAMS DEVOTED TO LESBIAN/ GAY 8	% OF IRP DEVOTED TO LESBIAN/ GAY 9	MEAN IRP PROGRAMS DEVOTED TO NON SPECIFIC MINORITIES 10	% OF IRP DEVOTED NON SPECIFIC MINORITIES 11	MEAN IRP PROGRAMS DEVOTED TO OTHER MINORITIES 12	% OF IRP DEVOTED TO OTHER MINORITIES 13
STATION													
KYW-AM	77.1	3.2	4.2%	1.5	1.9%	0.3	0.4%	0.4	0.5%	2.5	3.2%	3.2	4.2%
WDAS-AM[2]	5.7	0.5	8.8%	1.8	31.6%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.1	1.8%
WDAS-FM[2]	3.3	0.0	0.0%	1.1	33.3%	0.0	0.0%	0.0	0.0%	0.1	3.0%	0.0	0.0%
WEAZ-AM	106.8	2.6	2.4%	1.1	1.0%	0.0	0.0%	0.2	0.2%	11.3	10.6%	7.0	6.6%
WEAZ-FM	Simulcast with WEAZ-AM												
WEGX-FM	18.5	1.9	10.3%	0.3	1.6%	0.1	0.5%	0.2	1.1%	0.7	3.8%	0.9	4.9%
WFLN-FM	12.2	0.7	5.7%	0.0	0.0%	0.0	0.0%	0.1	0.8%	0.0	0.0%	2.1	17.2%
WHAT-AM[2]	24.1	2.0	8.3%	4.9	20.3%	0.0	0.0%	0.0	0.0%	0.6	2.5%	0.4	1.7%
WHYY-FM	17.8	1.1	6.2%	1.5	8.4%	0.2	1.1%	0.2	1.1%	0.7	3.9%	0.5	2.8%
WIOQ-FM	3.9	0.6	15.4%	0.2	5.1%	0.1	2.6%	0.0	0.0%	0.0	0.0%	0.6	15.4%
WIP-AM	9.3	1.0	10.8%	0.2	2.2%	0.0	0.0%	0.1	1.1%	0.1	1.1%	1.2	12.9%
WMGK-FM	9.2	1.5	16.3%	1.1	12.0%	0.2	2.2%	0.0	0.0%	0.7	7.6%	0.6	6.5%
WMMR-FM	8.6	1.1	12.8%	0.3	3.5%	0.0	0.0%	0.2	2.3%	0.4	4.7%	0.9	10.5%
WOGL-FM	10.9	0.7	6.4%	0.3	2.8%	0.2	1.8%	0.0	0.0%	0.5	4.6%	0.4	3.7%
WPEN-AM	8.8	1.4	15.9%	0.9	10.2%	1.0	11.4%	0.0	0.0%	0.6	6.8%	0.6	6.8%
WUSL-FM	22.7	2.8	12.3%	5.9	26.0%	0.2	0.9%	0.2	0.9%	2.0	8.8%	0.8	3.5%
WWDB-FM	15.8	1.4	8.9%	0.3	1.9%	0.0	0.0%	0.3	1.9%	0.2	1.3%	1.1	7.0%
WXTU-FM	35.2	2.2	6.3%	0.2	0.6%	0.0	0.0%	0.0	0.0%	0.3	0.9%	3.8	10.8%
WYSP-FM	20.8	1.5	7.2%	0.7	3.4%	0.0	0.0%	0.1	0.5%	0.5	2.4%	0.9	4.3%

1. Other minorities include Asian-Americans, Jewish-Americans, the Elderly, the Handicapped and Children.

2. Minority owned

Source: Stations' Quarterly Issue Program Reports

Not Additive

Table 5: Reported Issue-Responsive Programming Selected Philadelphia, PA Commercial Radio Stations—1989 and 1990

(Excepting WHYY-FM which is Public Radio)
Time and Programming Devoted to Health and AIDS

	MEAN MIN/MONTH OF HEALTH ISSUES	MEAN MIN/MONTH AIDS	AIDS AS % OF HEALTH	MEAN IRP PROGRAMS DEVOTED TO HEALTH ISSUES	MEAN IRP PROGRAMS DEVOTED TO AIDS	AIDS AS % OF HEALTH
	1	2	3	4	5	6
STATION						
KYW-AM				13.8	0.8	5.8%
WDAS-AM[1]	71.2	17.1	24.0%	1.1	0.3	27.3%
WDAS-FM[1]	25.0	7.1	28.4%	0.6	0.2	33.3%
WEAZ-AM	45.2	4.3	9.5%	23.4	3.5	15.0%
WEAZ-FM	Simulcast with WEAZ-AM					
WEGX-FM	65.5	6.3	9.6%	2.7	0.2	7.4%
WFLN-FM				2.3	0.3	13.0%
WHAT-AM[1]	635.0	70.0	11.0%	6.1	0.6	9.8%
WHYY-FM	22.6	4.1	18.1%	1.7	0.5	29.4%
WIOQ-FM	51.7	8.3	16.1%	1.7	0.3	17.6%
WIP-AM	145.9	16.9	11.6%	2.9	0.2	6.9%
WMGK-FM	54.3	16.3	30.0%	1.9	0.5	26.3%
WMMR-FM	51.1	10.0	19.6%	1.7	0.3	17.6%
WOGL-FM	102.5	31.3	30.5%	2.5	0.9	36.0%
WPEN-AM	62.5	13.8	22.1%	1.9	0.5	26.3%
WUSL-FM	81.1	23.9	29.5%	3.8	1.2	31.6%
WXTU-FM	63.7	6.5	10.2%	6.9	0.5	7.2%
WYSP-FM	128.0	17.1	13.4%	2.7	0.4	14.8%
WWDB-FM	280.7	20.0	7.1%	3.2	0.3	9.4%

1. Minority owned

Source: Stations' Quarterly Issue Program Reports

Commercial Radio Stations Philadelphia Designated Markets Quarterly Issues Program Lists—Sample 4th Quarter 1990

			FCC REQUIREMENTS (A)				PSA's (B)		PROGRAM DURATION REPORTED							REBROADCASTS REPORTED						
	PROGRAM SCHEDULE OR INDEX 1	PROGRAM SOURCE 2	PROGRAM DESCRIPTION 3	DESCRIPTION—TIME, DURATION, DATE OF EACH PROGRAM 4	PROGRAM TITLE 5	TYPE OF PROGRAMMING 6	PSA's 7	REPORTS PSA's ONLY 8	DURATION OF PA PROGRAMS 9	NEWS SEGMENTS 10	EDITORIALS 11	DOCUMENTARIES 12	SPECIALS 13	TALK 14	PSA's 15	REBROADCASTS PA PROGRAMS 16	NEWS SEGMENTS 17	EDITORIALS 18	DOCUMENTARIES 19	SPECIALS 20	TALK 21	PSA's 22
101 KYW-AM	N	N	Y	Y/N	Y	Y	Y	N	N	N	Y	N/R	N	N/R	Y	N	N	Y	N/R	N/R	N/R	Y
102 WDAS-AM	N	N	Y	Y	Y	Y	N	N	Y	N/R	N/R	N/R	N/R	Y	N/R	N	N/R	N/R	N/R	N/R	N	N/R
103 WDAS-FM	N	N	Y	Y/N	Y	Y	N	N	Y	N/R	N/R	N/R	N/R	Y	N/R	N	N/R	N/R	N/R	N/R	N	N/R
104/105 WEAZ-AM/FM	N	Y/N	Y	Y/N	Y	Y/N	Y	N	Y	N/R	N/R	N/R	N/R	N/R	N	N	N/R	N/R	N/R	N/R	N/R	N/R
106 WEGX-FM	N	Y	Y	Y	Y	Y	Y	N	Y	N/R	N/R	N/R	N/R	Y	Y	Y	N/R	N/R	N/R	N/R	N	N/R
107 WFLN-FM	N	N	Y	Y/N	Y	Y	Y	N	Y	N/R	N/R	N/R	Y	N/R	N	N	N/R	N/R	N/R	N	N/R	Y
108 WHAT-AM	N	N	Y	Y	Y	N	N	N	Y	N/R	N/R	N/R	N/R	Y	N/R	N/R	N/R	N/R	N/R	N/R	N	N/R
109 WHYY-FM	N	N	Y	Y/N	Y	Y	N	N	Y	N/R	N/R	Y	Y	Y	N	Y	N/R	N/R	Y	N	N	N
110 WIOQ-FM	Y	Y	Y	Y	Y	Y	N	N	Y	N/R	N/R	N/R	N/R	Y	N/R	N/R	N/R	N/R	N/R	N/R	N	N/R
111 WIP-AM	Y	Y	Y	Y	Y	Y	N	N	Y	N/R	N/R	N/R	N/R	Y	N/R	N/R	N/R	N/R	N/R	N/R	N	N/R
112 WMMR-FM	N	N	Y	Y	Y	Y	N	N	Y	N/R	N/R	N/R	N/R	Y	N/R	N/R	N/R	N/R	N/R	N/R	N	N/R
113 WOGL-FM	N	N	Y	Y	Y	Y	N	N	Y	N/R	Y	N/R	N/R	Y	N/R	Y	N/R	N/R	N/R	N/R	N	N/R
114 WPEN-AM	N	Y	Y	Y	Y	Y	N	N	Y	N/R	N/R	N/R	N/R	Y	N/R	N/R	N/R	N/R	N/R	N/R	N	N/R
115 WUSL-FM	N	Y	Y	Y	Y	Y	N	N	Y	Y	N/R	N/R	N/R	Y	N/R	N	Y	N/R	N/R	N/R	N	N/R
116 WXTU-FM	N	N	Y	Y	Y	Y	Y	N	Y	N/R	N/R	N/R	Y	Y	Y	Y	N/R	N/R	N/R	N	N	Y
117 WYSP-FM	N	N	Y	Y/N	Y	Y	Y	N	Y	N/R	N/R	N/R	N/R	Y	N	N/R	N/R	N/R	N/R	N/R	N	N/R
209 WMGK-FM	N	Y	Y	Y	Y	Y	N	N	Y	N/R	N/R	N/R	N/R	Y	N/R	N/R	N/R	N/R	N/R	N/R	N	N/R
214 WWDB-FM	N	N	Y	Y	Y	Y	N	N	Y	N/R	N/R	N/R	N/R	Y	N/R	N/R	N/R	N/R	N/R	N/R	N	N/R

A. FCC CFR 73.3526 (a) (B). National Association of Broadcasters (Info-Pak/May-June 1988)

B. The station reports PSA's only, and does not report any public affairs programs.

LEGEND: Y = Yes; N = No; Y/N = Yes in part, No in part; 0 = Inconsistent information; N/R = Not Reported

Table 6

Addendum: Reported Issue-Responsive Programming Time: Selected Philadelphia, PA Commercial Radio Stations—1989 and 1990

(Excepting WHYY-FM which is Public Radio)
Reported Time Devoted to Repeated Issue-Responsive Programming [IRP]

STATION	FREQUENCY	FORMAT	MINUTES PER MONTH OF BROADCAST TIME 1	MONTHS STUDIED 2	MEAN MIN/MONTH OF REPORTED ISSUE RESPONSIVE PROGRAMMING [IRP] 3	% OF BROADCAST TIME DEVOTED TO IRP 4	MIN/MONTH OF REPEATED IRP (REPORTED) 5	% OF BROADCAST TIME DEVOTED TO REPEATS 6	% OF BROADCAST TIME DEVOTED TO ALL IRP INCLUDING REPEATS 7
KYW-AM	1060	All News	43776	12					
WDAS-AM[1]	1480	Urban contemp. & gospel	43776	21	445.1	1.0%	N/R		
WDAS-FM[1]	105.3	Progressive Soul	43776	21	156.6	0.4%	24.4	0.06%	0.46%
WEAZ-AM	560	Adult contemp.	43776	19.7	217.2	0.5%	-	-	-
WEAZ-FM	101.1	Adult contemp.	43776	Simulcast with WEAZ-AM					
WEGX-FM	106.1	Contemp. hits	43776	24	425.5	1.0%	-	-	-
WFLN-FM	95.7	Classical music	43776	24					
WHAT-AM[1]	1040	Talk radio	43776	12	3125.0	N/A	N/R		
WHYY-FM	90.9	Music, public radio '89-'90	34656	24	495.1	1.4%	N/R		
WIOQ-FM	102.1	Contemp. dance	43776	18	118.3	0.3%	N/R		
WIP-AM	610	Sports	43776	24	446.8	1.0%	N/R		
WMGK-FM	102.9	Adult contemp.	43776	24	271.7	0.6%	5.0	0.01%	0.61%
WMMR-FM	93.3	Album rock	43776	21	264.0	0.6%	N/R		
WOGL-FM	98.1	Music of 50s, 60s, 70s	43776	24	438.8	1.0%	298.1	0.68%	1.68%
WPEN-AM	950	Nostalgia	43776	24	298.8	0.7%	-	-	-
WUSL-FM	98.9	Urban-contemp.	43776	24	487.9	1.1%	10.25	0.02%	1.12%
WWDB-FM	96.5	Talk radio	43776	12	1386.5	N/A	N/R		
WXTU-FM	92.5	Contemp. country	43776	24	284.6	0.7%	166.5	0.38%	1.08%
WYSP-FM	94.1	Classic rock	43776	24	808.5	1.8%	N/R		

1. Minority owned
N/A = Not Available
N/R = Not Reported.
Source: Stations' Quarterly Issue Program Reports

Broadcast Time Devoted to Issue-Responsive Programming

Selected Philadelphia, PA Commercial Radio Stations, 1989-90

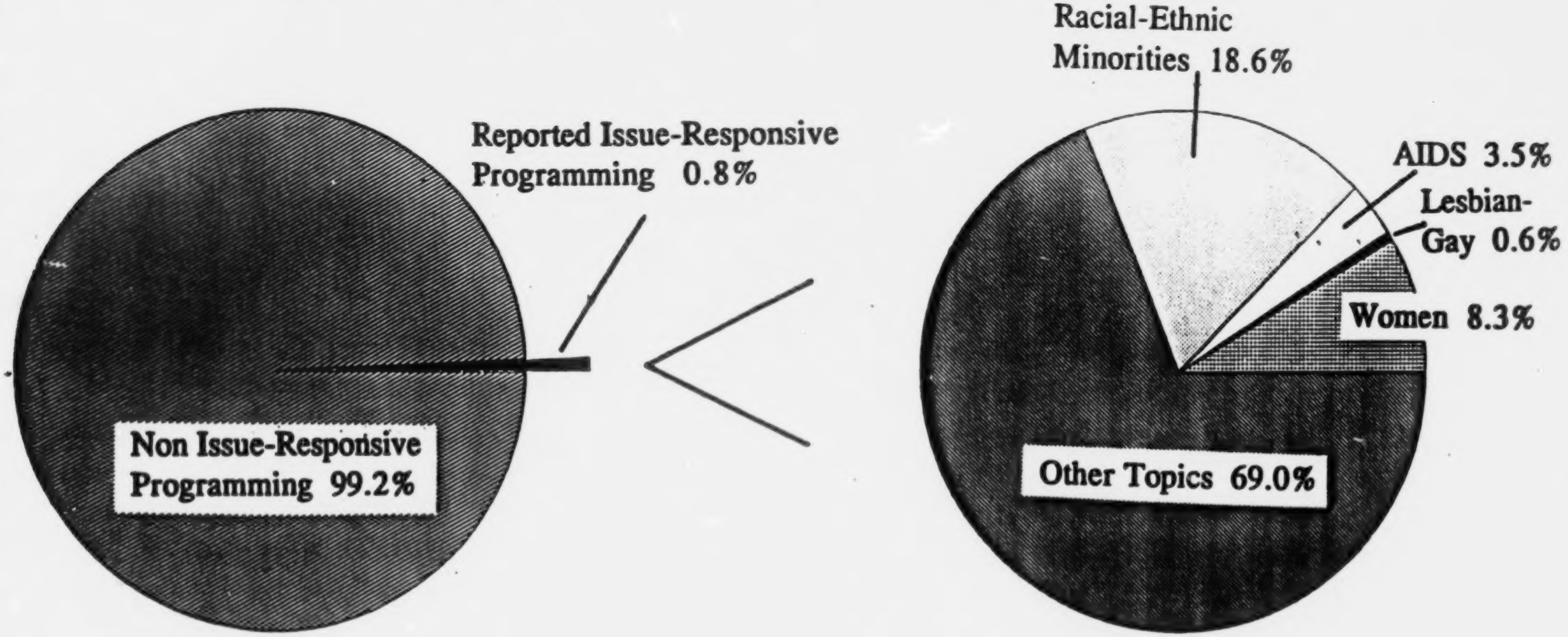

Fig. 1. Reported issue-responsive programming represents a very minor part of daily broadcasts. The left pie chart illustrates the fact that on the average, less than one percent of broadcast time is devoted to issue-responsive programming. This 0.8% slice is exploded in the right pie chart to show that only about one-third of reported issue-responsive programming deals with women, minorities, and AIDS. The 15 Philadelphia radio stations represented include WDAS-AM/FM, WEAZ-AM/FM, WEGX-FM, WHYY-FM, WIOQ-FM, WIP-AM, WMGK-FM, WMMR-FM, WOGL-FM, WPEN-AM, WUSL-FM, WXTU-FM, and WYSP-FM. *Copyright 1991, Philadelphia Lesbian and Gay Task Force.*

Broadcast Time Devoted to Women and Minorities

Selected Philadelphia, PA Commercial Radio Stations, 1989-90

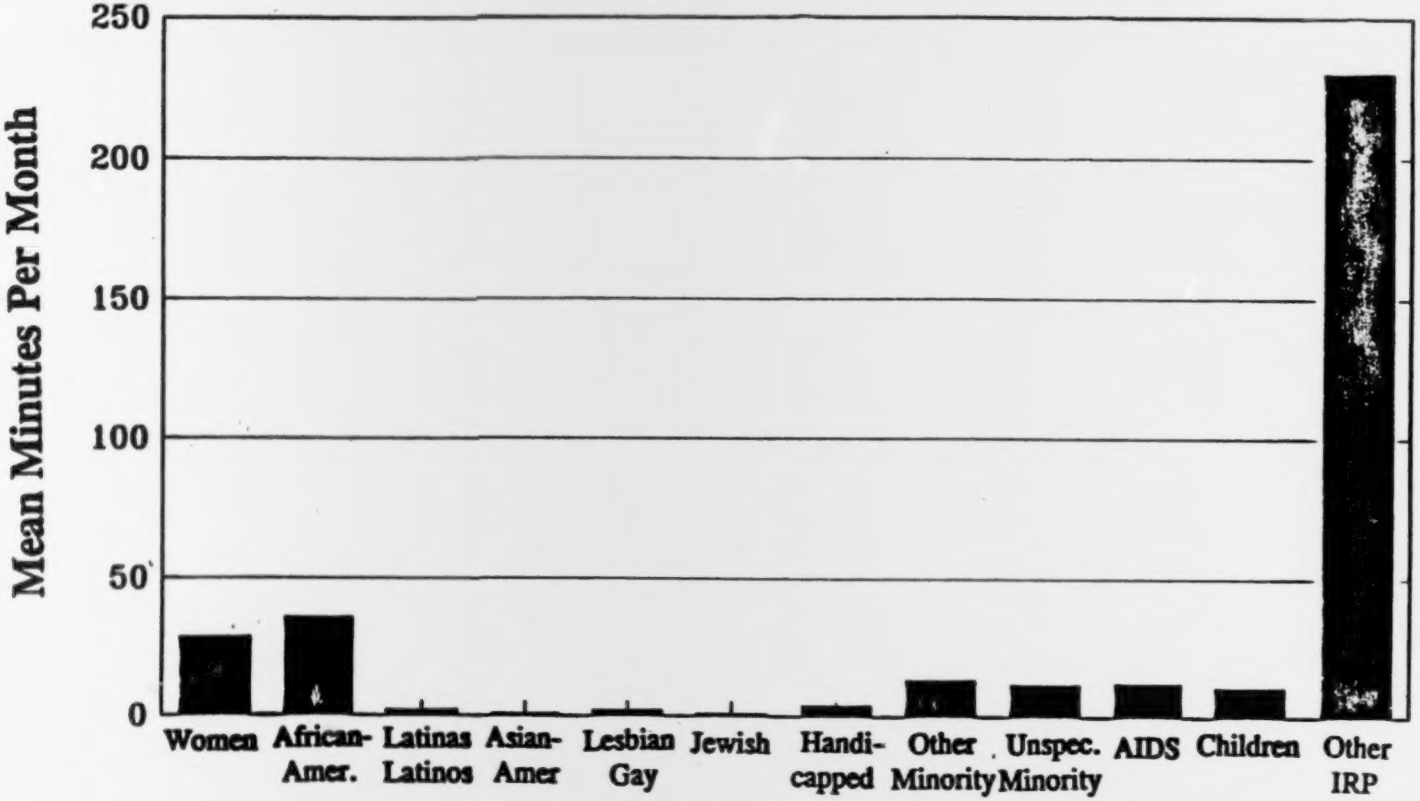

Fig. 2. The average distribution of broadcast time per month is shown for each of the eleven categories of analysis. The large bar on the right indicates reported issue-responsive programming (IRP) which is devoted to other topics. All twelve bars combined are shown under the issue-responsive bar in Fig. 3. The 15 stations in this sample include WDAS-AM/FM, WEAZ-AM/FM, WEGX-FM, WHYY-FM, WIOQ-FM, WIP-AM, WMGK-FM, WMMR-FM, WOGL-FM, WPEN-AM, WUSL-FM, and WYSP-FM. *opyright 1991, Philadelphia Lesbian and Gay Task Force.*

Issue-Responsive Programming in Perspective

Selected Philadelphia, PA Commercial Radio Stations, 1989-90

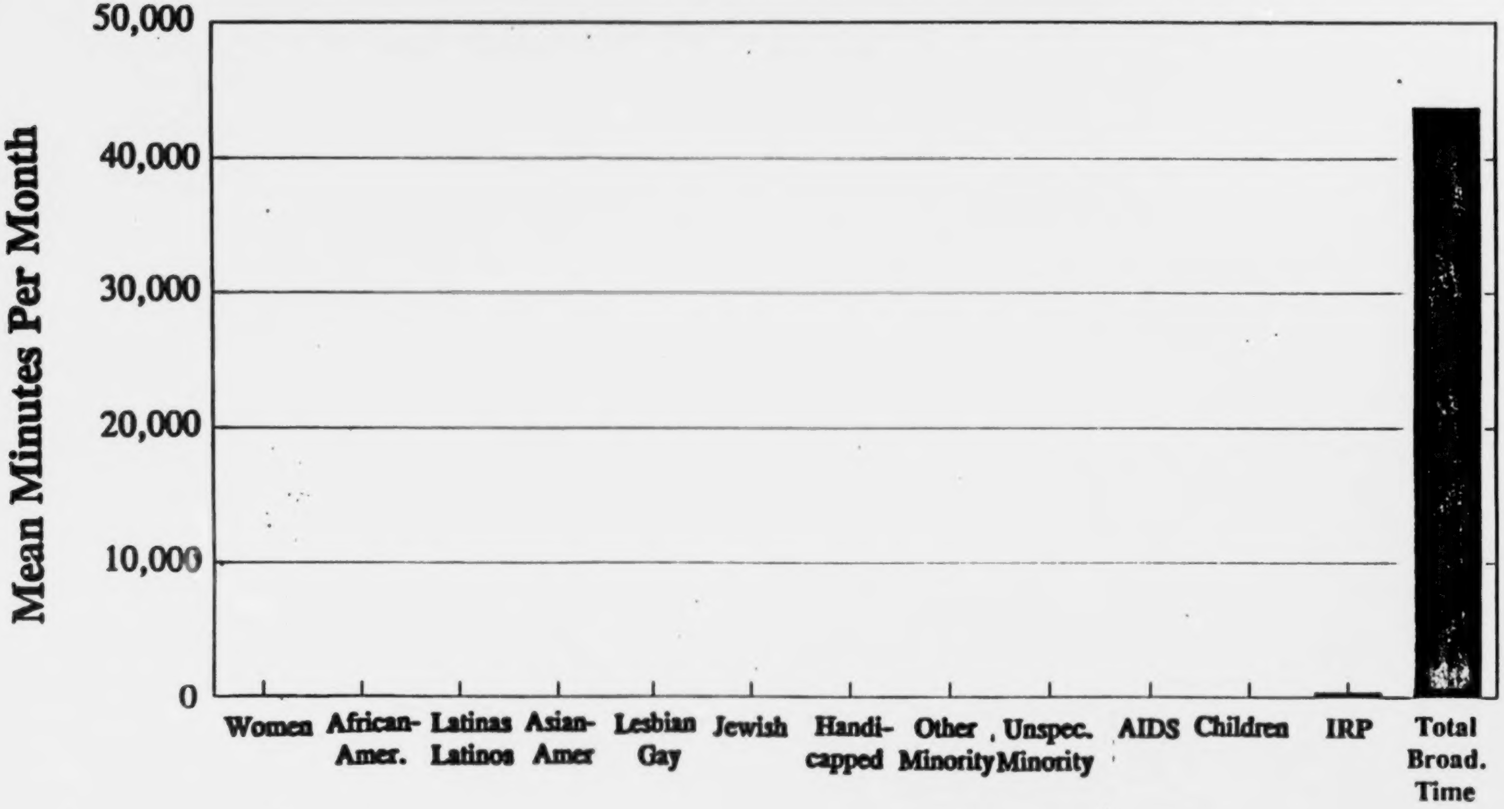

Fig. 3. Coverage of women and minorities is put into perspective when compared to total broadcast time. The large bar on the right reprents the 43,776 minutes per month of available air time. The barely noticeable bar just to the left shows the approximately one percent devoted to reported issue-responsive programming (IRP). The eleven categories of women and minorities are so insignificant that they show up as zero by comparison. These data represent the average of 15 Philadelphia radio stations including WDAS-AM/FM, WEAZ-AM/FM, WEGX-FM, WHYY-FM, WIOQ-FM, WIP-AM, WMGK-FM, WMMR-FM, WOGL-FM, WPRN-AM, WUSL-FM, WXTU-FM and WYSP-FM. *Copyright 1991, Philadelphia Lesbian and Gay Task Force.*

Appendix 1.1

1990 MINORITY PERCENTAGE OF POPULATION BY COUNTY IN THE PHILADELPHIA ADI [1]

STATE	COUNTY	TOTAL # (ALL PERSONS)	% LESBIAN WOMEN/ GAY MEN [2]	% WOMEN	% BLACK (MEN & WOMEN)	% HISPANIC ORIGIN (MEN & WOMEN)	% ASIAN/ PAC. ISLAND (MEN & WOMEN)
DE	KENT	110993	10.0%	51.09%	18.59%	2.29%	1.28%
DE	NEW CASTLE	441946	10.0%	51.60%	16.48%	2.67%	1.59%
NJ	ATLANTIC	224327	10.0%	51.94%	17.41%	7.18%	2.13%
NJ	BURLINGTON	395066	10.0%	50.57%	14.31%	3.24%	2.05%
NJ	CAMDEN	502824	10.0%	51.91%	16.24%	7.16%	2.30%
NJ	CAPE MAY	95089	10.0%	51.97%	5.61%	1.95%	.64%
NJ	CUMBERLAND	138053	10.0%	51.20%	16.89%	13.29%	.82%
NJ	GLOUCESTER	230082	10.0%	51.34%	8.66%	1.80%	1.25%
NJ	MERCER	325824	10.0%	51.63%	18.87%	0.44%	3.07%
NJ	SALEM	65294	10.0%	51.84%	14.65%	2.20%	0.58%
PA	BERKS	336523	10.0%	51.67%	2.97%	5.10%	0.82%
PA	BUCKS	541174	10.0%	50.77%	2.83%	1.64%	1.56%
PA	CHESTER	376396	10.0%	51.00%	6.37%	2.28%	1.08%
PA	DELAWARE	547651	10.0%	52.32%	11.22%	1.10%	1.83%
PA	LEHIGH	291130	10.0%	51.93%	3.01%	5.15%	1.26%
PA	MONROE	95709	10.0%	50.79%	1.80%	2.14%	.70%
PA	MONTGOMERY	678111	10.0%	51.93%	5.77%	1.23%	2.36%
PA	NORTHAMPTON	247105	10.0%	51.36%	2.13%	4.69%	1.10%
PA	PHILADELPHIA	1545577	10.0%	54.85%	40.89%	5.77%	2.82%
	TOTAL	6411608	10.0%	52.32%	16.35%	3.99%	1.88%

[1] These statistics reflect persons of all ages.
The SMSA is the term untilized by the Census Bureau defined as the Standard Metropolitan Statistical Area. The 8 counties in the Philadelphia SMSA are: Burlington, NJ; Camden, NJ; Gloucester, NJ; Bucks, PA; Chester, PA; Delaware, PA; Montgomery, PA; Philadelphia, PA.

[2] Studies show that no less than 10% of all persons are lesbian or gay.
In the Philadelphia ADI there are 641,161 gay and lesbian people.
Source: Kinsey, etal. Sexual Behavior in the Human Male, Phila. 1948 pp. 610-666
Kinsey etal. Sexual Behavior in the Human Female, Phila. 1953, pp 446-501.

[3] Persons of Spanish Origin are comprised of all races, and are therefore used as an ethnic rather than racial minorty in this calculation.

Source: Statistical Information Staff: Population Division,
Bureau of the Census, Washington, D.C. 20233

Appendix 1.2

1990 MINORITY PERCENTAGE OF POPULATION BY COUNTY IN THE PHILADELPHIA SMSA [1]

STATE	COUNTY	TOTAL # (ALL PERSONS)	% LESBIAN WOMEN/ GAY MEN [2]	% WOMEN	% BLACK (MEN & WOMEN)	% HISPANIC ORIGIN (MEN & WOMEN)	% ASIAN/ PAC. ISLAND (MEN & WOMEN)
NJ	BURLINGTON	395066	10.0%	50.57%	14.31%	3.24%	2.05%
NJ	CAMDEN	502824	10.0%	51.91%	16.24%	7.16%	2.30%
NJ	GLOUCESTER	230082	10.0%	51.34%	8.66%	1.80%	1.25%
PA	BUCKS	541174	10.0%	50.77%	2.83%	1.64%	1.56%
PA	CHESTER	376396	10.0%	51.00%	6.37%	2.28%	1.08%
PA	DELAWARE	547651	10.0%	52.32%	11.21%	1.10%	1.83%
PA	MONTGOMERY	678111	10.0%	51.93%	5.77%	1.23%	2.36%
PA	PHILADELPHIA	1545577	10.0%	54.85%	40.89%	5.77%	2.82%
	TOTAL	4816881	10.0%	52.32%	19.31%	3.61%	2.17%

[1] These statistics reflect persons of all ages.
The SMSA is the term utilized by the Census Bureau defined as the Standard Metropolitan Statistical Area. The 8 counties in the Philadelphia SMSA are Burlington, NJ; Camden, NJ; Bucks, PA; Chester, PA; Delaware, PA; Gloucester, NJ; Montgomery, PA; Philadelphia, PA.

[2] Studies show that no less than 10% of all persons are lesbian or gay.
In the Philadelphia ADI there are 641,161 gay and lesbian people.
Source: Kinsey, etal. Sexual Behavior in the Huma Miale, Phila. 1948 pp. 610-666
Kinsey, etal. Sexual Behavior in the Human Female, Phila. 1953, pp 446-501.

[3] Persons of Spanish Origin are comprised of all races, and are therefore used as an ethnic rather than racial minorty in this calculation.

Source: Statistical Information Staff: Population Division,
Bureau of the Census, Washington, D.C. 20233

Appendix 2

PHILADELPHIA SMSA LABOR FORCE AVAILABILITY - 1989 ANNUAL AVERAGE

TOTAL PHILADELPHIA PRIMARY METROPOLITAN STATISTICAL AREA		TOTAL # (ALL PERSONS)	LESBIAN WOMEN/ GAY MEN		WOMEN		BLACK (MEN & WOMEN)		HISPANIC ORIGIN (MEN & WOMEN)		TOTAL MINORITY (MEN & WOMEN)	
			#	%	#	%	#	%	#	%	#	%
	TOTAL	2,471,000	247,100	10%	1,140,000	46.14%	416,000	16.84%	44,000	1.78%	460,000	18.62%

[1] These statistics reflect persons of all ages.
The PMSA is the term untilized by the Census Bureau defined as the Primary Metropolitan Statistical Area. The 8 counties in the Philadelphia PMSA are Burlington, NJ; Camden, NJ; Bucks, PA; Chester, PA; Delaware, PA; Gloucester, NJ; Montgomery, PA; Philadelphia, PA.

[2] Studies show that no less than 10% of all persons are lesbian or gay.
In the Philadelphia PMSA there are 247,100 gay and lesbian people.
Source: Kinsey, etal. Sexual Behavior in the Huma Miale, Phila. 1948 pp. 610-666
Kinsey etal. Sexual Behavior in the Human Female, Phila. 1953, pp 446-501.

[3] Persons of Spanish Origin are comprised of all races, and are therefore used as an ethnic rather than racial minorty in this calculation.

Source: Pennsylvania Bureau of Research and Statistics Labor Market Anaylsis Section
Annual Average 1989

Appendix 3

A COMPOSITE SAMPLE OF PHILADELPHIA, PA COMMERCIAL RADIO STATIONS QUARTERLY ISSUES PROGRAM LISTS: 4TH QUARTER 1990

Appendix 3

A COMPOSITE SAMPLE OF PHILADELPHIA, PA COMMERCIAL RADIO STATIONS QUARTERLY ISSUES PROGRAM LISTS: 4TH QUARTER 1990

The following include verbatim extracts , when possible , from the introduction of each station's quarterly issues/programs lists for the fourth quarter of 1990.

101. KYW-AM:

Dial [frequency] - 1060 AM
Popular Name - KYW - News Radio
Format - All News
Arbitron Rating - Rank # 1, share 8.8 (winter -91).

> "Station KYW (AM) provides all news radio service to Philadelphia and the surrounding Delaware Valley area. By its very nature this service deals with, and is responsive to, significant community issues on a regular basis. A variety of program elements, ranging from breaking news events to in-depth reports, commentaries, public service announcements and broadcast editorials on matters of concern to the community are included within the service provided by KYW. Our most significant programming which has dealt with current community issues during the preceding three month period is set forth below."

The station lists news stories, editorials and PSA's along with their title, description and date of broadcast. Each description is accompanied by the list of issues addressed by the news story, editorial or PSA. The time of broadcast, however, is given as "various times" for all programming. The duration of program is noted for PSA's and editorials but not for news stories.

Except for editorials and PSA's there is no mention of rebroadcasts for news stories.

102. WDAS -AM:

Dial (Frequency) - 1480 AM
Popular Name - -
Format - Urban contemporary and gospel music
Arbitron Rating - N/A

> "In accordance with FCC Rule 73.3526 (a) (9), the following in the opinion of the station WDAS-AM are problems and needs of community for the period noted above. They are not necessarily listed in order of importance. Each is identified by significant public affairs and /or public service programming in response to these needs. The list below was determined by personal consultation with community leaders."

The programs were listed with their titles and descriptions under each of the issues addressed. The date and time of broadcast and duration was mentioned. The station did not list its PSA's.

103. WDAS - FM

Dial - (frequency) - 105.3 FM
Popular Name: N/A
Format - progressive soul music
Arbitron Rating - N/A

> "In accordance with FCC Rule 73.3526 (a) (9), the following in the opinion of station WDAS -FM are problems and needs of the community for the period noted above. They are not necessarily listed in order of importance . Each is identified by significant public affairs and/or public service programming in response to these needs. The list below was determined by personal consultation with community leaders."

The issues considered significant and the public affairs programming reported under each issue are listed along with title, date of broadcast and duration of program/segment. PSA's were not listed and the reporting of the time of broadcast was inconsistent.

104/105 WEAZ-AM/FM :

Dial (frequency) - 560 AM / 101.1 FM
Popular Name - / EAZY 101
Format - Contemporary music / adult contemporary music
Arbitron Rating - # 5 : Share - 5.5 (April '91)

> " For quarter ending 4 th quarter (Oct - Nov - Dec) 1990. During this period, WEAZ has determined that the following issues were of significance to the community. 1. children 22. education 3. homeless /poverty 4. environment 5. drugs/alcohol 6. minorities and discrimination 7. handicapped 8. business issues 9. seniors 10. animal awareness and rights. WEAZ AM and FM broadcast the following programs to address these community concerns this quarter."

The quarterly program list mentions the title and description of programs, date and time of broadcast and duration of its issue responsive programming.

The duration and time of broadcast for PSA's is not noted in the list for this quarter.

106 WEGX - FM:

Dial (frequency) - 106.1 FM
Popular Name - Eagle 106
Format - Contemporary Hit Radio
Arbitron Rating - Rank # 9 : Share 4.2 (April '91)

> "Ascertainment list for the period covering October through December. Business, charities, civic needs, culture, education, environment, government, minority, ethnic, youth, women, public health, welfare/safety, recreation and entertainment. The radio station's ascertainment list has been completed through a combination of current events done during the working days plus internal surveys and attendance to two tri-state area ascertainment meetings with representatives of the community."

The list mentions the program title, description, date and time of broadcast and duration for public affairs programming, however, the date and time of broadcast for PSA's is not mentioned.

107 WFLN - FM :

Dial (frequency) - 95.7 FM
Popular Name -
Format - Classical Music
Arbitron Rating - N/A

> " The following five areas of concern were determined to have primary significance by the frequency of identification by community leaders interviewed during the group ascertainment process, Oct. 23 '90. 1. Affordable housing and hunger 2. support of non-profit organizations 3. public safety 4. health care 5. employment/unemployment. Other areas of concern are also mentioned, and although not mentioned in this report, were given consideration in programming. They are as follows: 1. The arts 2. child care 3. consumer issues 4. The elderly 5. The environment / waste disposal 6. women's issues 7. gay and lesbian rights 8. volunteer organizations and 9. literacy."

The list contains the program descriptions, date and time of broadcast and duration, however, it does not indicate durations for its PSA's.

108 WHAT - AM:

Dial (frequency) - 1040 AM
Popular Name -
Format - Black Talk Radio
Arbitron Ratings - N/A

No introductory description of WHAT's programming appears in the Public File. The issues/Programs list for the fourth quarter is comprehensive with date and time of broadcast , program title, description and duration of program. However, the lists for the other 2 available quarters of 1990 (first and second), did not mention the time of broadcast or the duration of the program. The station does not report PSA's.

109 WHYY - FM :

Dial (frequency) - 90.9 FM
Popular Name - TV 12
Format - Talk Radio (News and Information)
Arbitron Rating - N/A

> "The licensee of radio station WHYY-FM (90.9) has determined that the following issues were of importance to the listeners in the Delaware Valley during the past three months and had aired the following programming to address the issues.

The list includes program title, description, date of broadcast and duration. The time of broadcast is not noted.

110 WIOQ - FM:

Dial (frequency) - 102.1 FM
Popular Name - Q 102
Format - contemporary dance music
Arbitron Rating - Rank # 8 : Share - 5.2

> "Significant issues and needs of the community are addressed by radio station WIOQ with a series of public affairs programs , three of which are produced in the studios of WIOQ. Public service announcements are also utilized with messages broadcast on a rotating basis throughout the 24-hour broadcast schedule."

The list reports the program title, description, date and time of broadcast, duration and provides copies of continuity sheets indicating the schedule of broadcasting the programs. This station's lists are comparatively more comprehensive than the average list provided by the other stations, however, no PSA's were reported.

111 WIP - AM :

Dial (frequency)_ - 610 AM
Popular Name - Sports Radio
Format - All Sports
Arbitron Ratings - N/A

No introductory description of WIP's programming appears in the Public File. The lists mentioned, however, the title of program, description, date and time of broadcast, duration and source of programs. The list did not include PSA's.

112 WMMR - FM:

Dial (frequency) - 93.3 FM
Popular Name -
Format - Album Rock
Arbitron Ratings - Rank # 6 : Share - 5.4

> "Station WMMR provides music and news service to the Philadelphia area. By its very nature, this service deals with and is responsive to the principal issues of the Philadelphia area on a regular basis. A variety of program

elements, ranging from reports of breaking news events to in-depth reports, commentaries and public service announcements on matters of concern to the community within the service provided by WMMR. Our most significant programming which dealt with current community issues during the preceding three month period are set forth below."

The list sets out the title, description of program and lists the the date and time of broadcast and duration of program, but it does not list its PSA's.

113 WOGL - FM:

Dial (frequency) - 98.1 FM
Popular Name -
Format : Music of the 50's, 60's and the 70's.
Arbitron Rating : N/A

> "Attached are listings of broadcasts or broadcast segments which in the station's judgement, reflect the station's most significant programming treatment of some ascertained community issues during the preceding three month period."

The list reports the title, description, the duration and the date/s of broadcast/rebroadcast of the station's public affairs programs. WOGL does not list its PSA's.

114 WPEN - AM :

Dial (frequency) - 950 AM
Popular Name -
Format - Nostalgia
Arbitron Rating - Rank # 2 : Share 6.9 (April '91)

> "It is our judgement, and based on the most recent ascertainments, that these are the most frequently mentioned community issues and problems. 1. The economy 2. employment and training 3. housing and homelessness 4. help for [poor and disadvantaged 5. youth 6. Persian Gulf Crisis 7. substance abuse 8. minorities and women 9. health and 10. crime."

The public affairs programs for both WPEN and WMGK are listed in the same file. Although some of the programs broadcast by both stations are the same, they are aired at different times of the same day.

The list includes the source, title, description, date and time of broadcast and duration of its public affairs programming. It does not report any PSA's.

115 WUSL - FM:

Dial (frequency) - 98.9 FM
Popular Name - Power 99
Format - Urban - Contemporary
Arbitron Rating - Rank # 3 : Share - 6.1 (April '91)

> " Top ten community concerns 1. substance abuse - developing effective prevention and treatment programs 2. education - learning strategies to support educational development and excellence 3. employment - supporting programs and policies which promote job opportunities for the unemployed and underemployed. 4. cultural pride -understanding and learning the history of different races to support inter-ethnic understanding 5. health - promoting a greater awareness of physical and mental disorders 6. crime - developing strategies for reducing the high rate of violent crime 7. family - creation of programs to strengthen the family unit. 8. environment - supporting a pollution free ecological community 9. economy - developing a plan to improve the city and region's financial state. 10. housing - creating greater opportunities for home ownership for low and middle income residents."

The list reports its public affairs and news programs / segments along with description, title, source, date and time of broadcast/rebroadcast and duration. It does not report any PSA's.

116 WXTU - FM:

Dial (frequency) - 92.5 FM
Popular Name -
Format - Contemporary country
Arbitron Rating - Rank # 6 : Share - 5.4 (April '91)

> " Our public service topics feature a number of issues that are important to our community. The following gives a good idea of the problems and issues that we address. 1. health 2. education 3. drug and alcohol abuse and rehabilitation 4. listener rights 5. transportation and 6. environment."

The list includes the title, description, duration, date and time of broadcast/rebroadcast and type of its public affairs programming. It also lists its PSA's.

117 WYSP - FM:

Dial (frequency) - 94.1 FM
Popular Name -
Format - Classic rock
Arbitron Rating - Rank # 4 : Share - 5.7 (April '91)

> "The following is a quarterly listing of programs that addressed community issues, as ascertained by WYSP, during the three month period October 1 1990 to December 31 1990, in these general categories. 1. Public health 2. labor/business 3. animal rights 4. consumer issues 5. in minority and ethnic group issues 6. government and 7. education."

The list includes the title, description, duration, date and time of broadcast of the public affairs programs. The station lists its PSA's but does not mention their duration or time of broadcast/rebroadcast.

209 WMGK - FM :

Dial (frequency) - 102.9 FM
Popular name - Magic
Format - Adult-contemporary
Arbitron Rating - Rank # 9 : Share 4.2 (April '91)

> "It is our judgement, and based on the most recent ascertainments, that these are the most frequently mentioned community issues and problems. 1. The economy 2. employment and training 3. housing and homelessness 4. help for poor and disadvantaged 5. youth 6. Persian Gulf Crisis 7. substance abuse 8. minorities and women 9. health and 10. crime."

The public affairs programs for both WPEN and WMGK are listed in the same file. Although some of the programs broadcast by both stations are the same, they are aired at different times of the same day.

The list includes the source, title, description, date and time of broadcast and duration of its public affairs programming It does not report any PSA's.

214 WWDB - FM:

Dial (frequency) - 96.5 FM
Popular Name - Talk Station
Format - Talk radio
Arbitron Rating - N/A

No introductory description of WWDB's programming precedes the quarterly issues/programs lists. The public affairs programs are listed, however, under each issue along with the title, description, duration, date and time of broadcast. It does not list its PSA's.

News Sources and Power Elites in
Newspaper Coverage of the Exxon Valdez Oil Spill

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News Sources and Power Elites in Newspaper Coverage of the Exxon Valdez Oil Spill

On March 24, 1989, the supertanker Exxon Valdez hit a reef in Alaska's Prince William Sound and leaked 11 million gallons of crude oil into the ice-strewn water. The resulting mess oiled a thousand miles of shoreline and killed thousands of sea otters, hundreds of thousands of birds and probably millions of less charismatic creatures. The Exxon Corporation spent two billion dollars recovering a small portion of the spilled oil, and offered another 1.1 billion dollars for an out-of-court legal settlement that was later rejected as too small by a federal judge and by the State of Alaska.

During the next six months, the dominant Alaska newspaper and three prominent American newspapers published 1,156 stories about Alaska oil spill.[1] Another newspaper, the Seattle Times, was awarded a 1990 Pulitzer Prize for its coverage of the spill. This paper looks at news sources named in those stories as reflections of journalistic values and measures of the power of various special interests groups that were struggling to define the event in ways that served their interests.

The Interests of Powerful Elites

Herman and Chomsky have described the procedure by which events are transformed into news stories as a process that ultimately serves powerful elites by reflecting the world as they wish it to be perceived.[2] The way in which journalists gather information about news events, Herman and Chomsky argued, assures greater media access to elite social and political groups, and largely precludes ways of framing events that do not reflect the interests of those groups. Molotch and Lester, after examining hundreds of newspaper stories about a 1969 oil spill near Santa Barbara, California, came to a similar conclusion: the contents of news accounts about that disaster were determined not so much by the relevant facts as by a power struggle among various news sources who had vested interests in differing self-serving interpretations of the spill.[3]

In the case of the Exxon Valdez spill, there were at least three established institutions with vested interests in how that event was defined: The Alaska oil industry, which may have made the 1989 shipping accident more likely by building the Exxon Valdez and other oil tankers with single rather than double hulls, and which may have made the accident more likely by systematically reducing the size of oil tanker crews; the State of Alaska, which receives 85 percent of its revenue from oil and which had approved the oil spill contingency plan that proved completely inadequate; and the administration of President George Bush, who had labelled himself "the environmental president," and under whose term as vice president the ability of the Coast Guard to monitor tanker safety in Prince William Sound had been substantially cut back by funding reallocations which reduced staffing of the Valdez, Alaska, Coast Guard station and which caused replacement of the existing radar vessel tracking system with a less powerful unit that was less able to follow the course of oil tankers as they passed through the hazardous waters of Prince William Sound.

Conceptual Framework of the Study

According to every major code of reporting ethics, the most basic goal of journalism is to seek and reveal the truth about important issues and events. A considerable number of scholarly studies, however, suggest that the routine process of newsgathering is governed by practical rather than idealistic concerns.[4] This may be particularly true when journalists report on industrial catastrophes, which are often outside their normal news beats in the conceptual as well as geographic sense. In their studies of how the news media cover disasters, Patterson[5] and Wilkins[6] found that coverage tended to focus on what happened rather than why it happened, and that stories were often told in terms of cultural stereotypes rather than as objective accounts of events.

The reporters who figuratively parachuted into Valdez, Alaska in March, 1989 faced formidable practical and journalistic problems that may have influenced how they gathered and reported news. There were not nearly enough hotel rooms, rental cars or telephone lines to meet the demand. The official sources of information were in town, but the spilled oil was dozens of miles away and accessible only by boat or aircraft. At day-long series of news conferences that were attended by angry area residents, the versions of events offered by Exxon often differed sharply from the observations of local citizens. High-profile representatives of the State of Alaska and of the administration of President George Bush were soon providing still other accounts of what was happening and why.

Hard facts were scarce. Reporters with little background in maritime safety, intertidal ecology or oil spill contingency planning had to find sources and meet daily deadlines. By analyzing who those sources were, this paper attempts to examine the power of various special interest groups to define how the spill was covered, and attempts to identify some of the differing journalistic values that distinguished the Pulitzer award-winning stories from the others.

If the sources given the most play by journalists in this major environmental event of the 1980s did not define it in terms that would mobilize public support for changes in government policy to minimize the probability of a recurrence, that would bode ill for journalism's ability to inform the public about the hundreds of other environmental problems and issues that receive less press scrutiny.

Journalism Awards and Journalistic Values

The Pulitzer Prize is widely regarded as the most prestigious peer recognition in journalism. It can reasonably be construed as a representation of the values journalists hold in high regard, independent of whatever pragmatic values drive their more routine news decisions. As such, the 20 Seattle Times stories about the Exxon Valdez oil spill that were awarded a Pulitzer Prize in 1990 are operationally defined as the embodiment of news values as journalists believe they should be applied in an ideal world.[7] Stories in the other four newspapers are used to represent disaster journalism as it is routinely practiced.

Hypotheses

H_1: If news accounts about the Exxon Valdez oil spill overrepresent power elites, it is reasonable to expect the sources for those stories to come predominantly from the three established power groups with interests in defining the story in ways that reflect their vested interests.

H_2: If journalists unwittingly select their sources in ways that provide a skewed representation of events, it is reasonable to expect that reporters will be less likely than their sources to agree with media critics who fault news accounts for not providing media consumers with enough information to establish informed opinion about public issues.

H_3: If the journalistic ideal of objective and impartial coverage is substantially different from the routine manner in which journalism is practiced, it is reasonable to expect a substantially different distribution of sources in news stories selected to reflect journalism ideals (e.g., those recognized with a Pulitzer Prize) than in those representing the corpus of all stories about the same event over a period of six months in four newspapers that did not receive formal peer recognition for their coverage of that event.

METHOD

To get a sense of the constraints under which reporters worked on this story, I observed press conferences in Valdez, Alaska on September 14 and 15, 1989 when the national media returned in force to cover the end of that year's cleanup effort. I also interviewed 18 print and television journalists who covered the spill, including four reporters from the Seattle Times who won a 1990 Pulitzer Prize for their coverage, two of their editors, and their publisher.[8] In addition, I interviewed 11 experts on oil spills, including the four sources most often cited by newspaper stories on scientific aspects of the spill.[9]

Electronic databases were then searched for the texts of all stories published between March 24 and September 30, 1989 in the Anchorage Daily News, Los Angeles Times, New York Times and Washington Post that contained the phrases "Exxon Valdez" and "oil spill." The spill occurred on March 24, and Exxon halted its 1989 cleanup effort on September 15.

Wire service stories, columns, editorials and articles without bylines were eliminated from the 1,156 stories obtained in this way. From those that remained, two coders selected bylined stories that attributed information to at least one source who appeared to have been contacted by the reporter or who talked to reporters at formal news conferences. Because the intent was to examine the process by which reporters actively pursue information, named sources who appeared only to have been observed without formal press contact (for example, in stories describing government hearings) were ignored. This process identified 483 stories with 116 different bylines.

The coders identified 1,439 different named sources in these stories, 254 of whom were named by more than one reporter.[10] In a separate effort, 144 named sources were identified in 20 Seattle Times stories about the Alaska oil spill that were awarded a 1990 Pulitzer Prize. Unnamed sources (e.g., "an Exxon spokesman") were also coded, but are not included here because there was no way to identify and contact them. When the two coders independently identified named sources in a random sample of 17 stories from the Anchorage Daily News, they agreed 91 percent of the time.

Addresses were located for 209 of the 254 sources named by more than one reporter.[11] Exxon declined to help locate addresses for the twenty sources who were identified as its employees and, after several months consideration, decided not to allow those employees to participate in the survey. On March 8, 1991, each of the sources for whom an address had been obtained was sent electronic clippings (laser printer copies of the computer story files) of the two stories in which s/he was named the largest number of times, and a questionnaire that asked about the accuracy of the two stories and assessed attitudes towards news coverage of the oil spill and other news events. After two follow-up mailings, 135 sources (65 percent) returned usable questionnaires.

The six months' coverage in the four newspapers included 60 first-author reporter bylines that appeared in more than one story. Evening network television coverage during the same period represented 18 correspondents who broadcast more than one story about the spill. Addresses were located for 58 of the 60 newspaper reporters, and for 17 of the 18 network correspondents. Questionnaires mailed in March, 1991 asked reporters and correspondents to evaluate the conditions under which they covered the spill, and to assess selected scholar's comments about how the media cover news events (Table 3).

Each reporter was also sent a list of his/her sources, and asked to comment on those who were memorable or difficult to locate. After two follow-up mailings, 50 of the 75 reporters (67 percent) returned usable questionnaires.

RESULTS

The analyzed stories represent 562,253 words written by 116 reporters who attributed information to named sources in articles published in the Anchorage Daily News, Los Angeles and New York Times and Washington Post.

TABLE 1 ABOUT HERE

As expected, a majority of the sources represent government power elites with vested interests in how the Exxon Valdez oil spill was defined in news accounts (Table 1). More than half of all the named sources were government officials. An additional 22 percent represented Exxon and the oil industry. Even among named scientists, 18 of 23 are government employees or under contract with government agencies rather than independent or university researchers.

Furthermore, representatives of the major power elites are cited more often than average, whereas all other categories of source are named less often than the mean rate of 12.1 citations per source. Although this was billed as a major environmental story, sources representing established environmental groups were cited, on average, only one-third as often as government officials, suggesting that these groups may have been perfunctorily included to provide journalistic "balance."

TABLE 2 ABOUT HERE

Among the 20 sources who were named in more than 10 stories published by the four newspapers, a similar pattern emerges (Table 2). Among these most-frequently-cited sources, six representatives of Alaskan governmental entities were named in 120 stories. Seven representatives of the federal government were named in another 91 stories. The oil industry was represented by three Exxon officials who were named in 72 stories. Three additional sources who were cited in more than 10 stories represent the federal scientific effort by the National Oceanic and Atmospheric Administration (23 stories) and the congressional response by Representative George Miller's House Interior Subcommittee on Water, Power and Offshore Energy (14 stories).

The two most cited sources were Dennis Kelso, Alaska Commissioner of Environmental Conservation (in 42 newspaper stories) and Frank Iarossi, president of the Exxon Shipping Company (in 39 newspaper stories). In some ways, initial coverage of the spill, especially in evening network television soundbites (13 and 17 stories respectively), was framed as a morality play featuring the forces of good (the State of Alaska, protector of the environment) and evil (Exxon, the giant oil company that polluted the sea and could not clean up its mess), personified by these representatives of the two institutions.

This distribution of sources supports the first hypothesis, which predicted that sources would come predominantly from the three powerful social institutions with an interest in how the oil spill was defined and explained. Other major groups and issues are not even represented by these 19 major sources. None of them represents any established environmental organization, any of the individual businesses impacted by the spill, any of fishermen and fisherwomen whose lives were dramatically changed by the spill, any of the independent scientists who studied the spill's environmental impact, any independent experts on maritime safety or oil spill containment, any of the crew members of the oil tanker Exxon Valdez, or any of the parties to the many lawsuits filed against the Exxon Corporation.

TABLE 3 ABOUT HERE

If news accounts of the spill represented a power struggle among powerful elites to frame the event in ways that served their interests, it would be appropriate to ask who won the battle. One way of doing that is to find out which groups were the most satisfied with the way the spill was covered, and which were the least satisfied. The last three variables in Table 3 suggest that the State of Alaska was the clear winner, its representatives being the most satisfied with both the specific news accounts evaluated by individual survey respondents and with the objectivity and thoroughness of newspaper accounts in general. Representatives of the Bush Administration and the oil industry are about equally dissatisfied with the stories that name them and with the thoroughness of newspaper accounts in general, but oil industry sources are substantially less satisfied than either of the other groups with the objectivity of print journalism in general.

The first five attitude scales in Table 3 suggest that the three power elites had substantially different agendas about how some of the relevant issues should be defined. For example, reporters, sources in general, and representatives of the State of Alaska and the Bush Administration indicate that the spill was a substantially bigger disaster than the one perceived by the oil industry. Representatives of the oil industry believe the two-billion dollar beach cleaning effort was more successful than reporters, sources in aggregate and sources representing Alaska, but Bush Administration sources considered the shoreline cleanup effort even more successful than the oil industry sources. That was, in fact, the basic media message from the various Coast Guard officers and cabinet officials dispatched to Alaska by the president: that the mess was being dealt with effectively.

One major effect of the spill was to delay oil exploration in the Arctic National Wildlife Refuge (ANWR), an effort that was on the verge of congressional approval just before the spill. Developing that oil is a mainstay of the Bush energy policy, and a holy grail of sorts for the Alaska oil industry, which needs new sources of oil to replace the declining Prudhoe Bay production that currently serves the eight-billion dollar trans-Alaska pipeline. Reporters, sources in general and State of Alaska sources all disagree slightly that the oil spill should halt development of ANWR, but the Bush Administration sources strongly disagree, and the oil industry sources disagree absolutely.

All five groups have about the same response to the idea that Prince William Sound was pristine before the spill but was polluted afterwards. But strong differences emerge on the attitude scale that examines the real versus perceived damage caused by the spill. Alaska government sources believe there was substantially more real damage than perceived, while Bush Administration sources saw the perception of damage as greater than the reality. The oil industry sources felt even more strongly that there was very little real damage but considerable perception of damage.

TABLE 4 ABOUT HERE

A comparison of sources' and reporters' assessment of comments by media critics who fault news accounts for not providing media consumers with enough information to establish informed opinion about public issues shows that reporters are significantly less likely that their sources to agree with these criticisms (Table 4). This is as predicted in the second hypothesis. Sources also assessed the news stories they had seen about the Exxon Valdez oil spill in newspapers and on television as being significantly less objective and more sensational than reporters perceived them to be (Table 3). While these findings may simply represent a tendency of people who produce a product to think more highly of it than consumers of that product, the differences could also be interpreted as supporting the idea that news consumers are more aware than journalists of inherent shortcomings in the way news sources are selected.

TABLE 5 ABOUT HERE

Hypothesis three predicted that news sources in the Pulitzer-winning stories would represent a set of journalistic values different from those applied to routine stories. A comparison of source categories in Pulitzer-winning coverage with the corpus of all stories over six months in the four newspapers that did not receive the Pulitzer Prize reveals that the the Pulitzer-winning stories were 10 times more likely to cite experts not employed by the oil industry, but much less likely to cite scientists or representatives of environmental organizations, or to name sources involved in the oiled-animal rescue effort (Table 5).

Sources in the the Pulitzer-winning stories are different in another way that eludes the source category analysis. Most of the 50 government sources cited in the Pulitzer stories were Unites States Coast Guard experts on tanker safety, whereas only one of the sources named in stories published by the four newspapers was this kind of expert. Furthermore, most of the oil company representatives named in the Pulitzer coverage were crew members on the oil tanker Arco Anchorage, on which Seattle Times reporter Eric Nalder rode to get a better understanding of issues related to the safe shipment of crude oil. Only one of the sources named in the four newspapers was a member of a tanker crew. In other words, the Pulitzer-winning coverage focused substantially more attention on oil transportation safety, and looked much more closely at the policy context in which the accident happened.

There is another sharp distinction between sources named in the Pulitzer-winning Seattle Times stories and in the stories published by the other four newspapers. Among 144 news sources named in the 20 Seattle Times stories, only 43 are among the 1,439 sources named by the other four newspapers. More than two-thirds of the Seattle Times sources are unique to that newspaper, suggesting that reporters from the Seattle Times used a substantially different approach to identifying and locating sources.

Interviews with reporters and editors at the Seattle Times identified that difference. The Seattle Times relied primarily on the wire services for information from press conferences and official sources, and let three of its four primary reporters assigned to the spill know that they were not expected to file daily stories. This freed them to seek sources outside Valdez, and thus go beyond the official information headquarters for the story; and to spend considerably more time researching their stories. Another difference between the Seattle Times coverage and that in many other newspapers is that the four reporters named in the Pulitzer Prize all had previous experience covering stories in Alaska and therefore had a better sense of where to go and with whom to talk.

DISCUSSION

This paper operationally defines award-winning news stories as the embodiment of journalistic ideals. That standard, applied to the Pulitzer-winning stories, suggests that journalists value stories that go beyond cultural stereotypes (drunken captain wrecks ship, inept oil company can't clean up the mess) to explain why industrial accidents happen. The award perspective also suggests that reporting as practiced in a journalistically-ideal world uses a substantially different set of values to identify news sources than reporting as it is routinely practiced.

Sources for routine newspaper stories about the Exxon Valdez oil spill were dominated by three elite groups with differing self-serving agendas about how the event should be interpreted. The State of Alaska, which portrayed itself as the innocent victim of betrayal by the oil industry, appears to have been particularly successful in its struggle to define the event. President George Bush, who was interested enough in the political implications of the spill to request daily briefings during the first few weeks,[12] seems to have been somewhat successful in portraying a media image of a concerned president whose cabinet officials and Coast Guard admirals made sure the shoreline cleanup proceeded expeditiously. Except for Exxon, the Alaska oil industry (represented by Alyeska, a consortium of companies that operates the Prudhoe Bay oil field and the Trans-Alaska pipeline) escaped largely unscathed. British Petroleum and Arco own larger shares than Exxon of Alyeska, which prepared the ineffective oil spill response plan, but these companies received no bad press. Exxon bore the brunt of critical media attention, but also received good press for its efforts to rescue oiled birds and otters, and for its financial largess in spending huge sums of money to mitigate the oil damage.

During the initial coverage period when the story regularly received prominent play in newspapers, the most cited sources were Alaska Commissioner of Environmental Conservation Dennis Kelso and Exxon Shipping President Frank Iarossi. Most of these stories overlooked the fact that Kelso had approved the disastrously ineffective Alyeska oil spill contingency plan, and that Iarossi was in Alaska primarily to coordinate the logistics of dealing with the spill, not to deal with the press.

TABLE 6 ABOUT HERE

Interviews with reporters who covered the spill indicated that Commissioner Kelso and his employees of the Alaska Department of Environmental Conservation went out of their way to make themselves available to reporters, but that Exxon's Iarossi was less well thought of by journalists as a source, and was not available to reporters except at press conferences. Table 6 shows a highly significant difference in the way these two primary sources were perceived by responding reporters, a difference that favored the interpretation of the spill and cleanup efforts as offered by the State of Alaska over that offered by Exxon

The surveys also provided more than 20,000 words of open-ended comments from reporters and their sources. While these anecdotal comments should be interpreted with caution, they may be of interest since they represent a systematic sampling of the reporters who covered the story and their sources.

The difference between how reporters perceived the State of Alaska and Exxon as news sources was not accidental. An aide to Alaska's then-governor Steve Cowper said, in his response to the survey, "From my perspective, the agenda was relatively easy to set for TV by providing "dramatic" pictures.[13] In the governor's office, as you know, we undertook a full-fledged propaganda operation and were quite successful at getting out our message in the short term. Exxon did better over the long haul because they had more money and Alaskans tended to loose the drive to beat up on Exxon." A spokesman for British Petroleum, the majority owner of the Alyeska consortium of oil companies that produce oil in Alaska, of which Exxon is a member, described Exxon's public relation skills this way: "Exxon operationally superior, horrible PR skills."

Comments from sources representing the three power elites about how the story was covered tended to reflect the relative success of their institutions in defining how the story was covered. An Alaska official who oversaw the shoreline cleanup effort, for example, said that newspaper coverage "was generally good and accurate." A Bush cabinet official wrote that "Overall, the quality of reporting was better than could be expected." Two public relations spokespersons for the oil industry were less sanguine. One wrote that he was "absolutely shocked by the almost universally poor performance of the media in the Exxon Valdez incident." Another wrote that "Seeing the way (the press) fabricated the 'facts' to convey their own agendas was disgusting."

Sources for stories about the Exxon spill were generally more satisfied with the way they were covered in the clips I sent than with coverage of the spill in general ($p < .001$). Except for three sources who said quotes attributed to them were fabricated, most of the complaints were about relatively minor inaccuracies and omissions. Sources who commented about characteristics of reporters who did a good job of covering the spill all said the best stories were from the reporters who spent the most time researching them. A resident of an Alaska fishing village who was cited as a source in five stories wrote that "We quickly learned to give little time to TV newscasters, magazine reporters, and short time political junketers and devote more time to those newspaper persons writing large specials, TV journalists doing in-depth stories, book authors and politicians and others willing to take a considerable amount of time."

Since Exxon did not allow its quoted employees to participate in the survey, the results do not indicate whether Exxon employees were satisfied with the way they were covered in stories about the spill.

A scientist quoted in news stories said he wished "that the media would treat 'scientific info' as something more than another opinion. There is a reason," he said, "to do all those careful studies." An employee of the State of Alaska who dealt with the initial press onslaught in Valdez had more empathy with the reporters' dilemma:

> This was an especially tough story for a general assignment reporter (98 percent of those I worked with fell into this group) because it was littered with opinionated folks who didn't have a lot of facts early on in the incident. The reporters, for the most part, had no way to distinguish opinion from fact and vice-versa.

Several journalists who reported on the spill made observations about how it was covered. An environmental reporter who wrote many stories about it empathized with the plight of outside reporters flown in on short notice.

> First, I think it's generally very hard for most reporters to be dropped cold in a place they've never seen -- Valdez, Alaska -- and be expected to become instant experts on something they probably haven't even read much about -- tankers, maritime safety, the oil industry, Exxon Corp. The result is almost always going to be a pack response, with reporters bolstering each other's insecurities by sticking to essentially the same stories from the same readily available sources -- Exxon flacks, DEC (Alaska Department of Environmental Conservation) officials, angry fishermen.

A reporter from the New York Times wrote that "We often failed to put the Exxon Valdez in the context of broader energy use. It is a side effect of 140 million cars traveling two trillion miles a year."

A reporter who wrote more than 100 stories about the spill for the Anchorage Daily News reflected this way on how the media covered it:

> In hindsight, I see the spill both as an industrial disaster, and as a memoir of our society written indelibly on the rocks of coastal Alaska. The spill was inevitable, given drunk captains driving

> tankers past Bligh Reef. And, once it happened, the cleanup was impossible, and ultimately was destructive to the environment. But the people who run our nation, and our society, had an overwhelming interest in obfuscating that message. They could not acknowledge that our technology exists at an inevitable cost to the wilderness, and that the wilderness exists only to the extent that we protect it from ourselves....
>
> The worst coverage of the spill understood none of this. It saw the disaster as a melodrama -- Exxon the villain, DEC (the Alaska Department of Environmental Conservation) as hero, fishermen and anthropomorphic otters as victims. It was based on assumptions created with an interest in convincing us that the villain could be reformed, restitution paid, damage repaired, and curtain dropped without our having to look beyond the confines of the stage. And that reassuring assumption was wrong.

The data reported here do not conclusively determine whether the media systematically reported the Exxon Valdez oil spill in a way that favored powerful vested interests. They do suggest, however, that the State of Alaska was successful in its effort to frame coverage of the spill in a way that reflected its interests favorably. The findings here indicate the value of further research into the values that determine how reporters select their sources, and suggest a formal content analysis to determine whether the scholarly criticisms summarized earlier in the paper are an accurate description of how this industrial disaster was covered.

NOTES

[1] The newspapers are the Anchorage Daily News (519 stories), the Los Angeles Times (312 stories), the New York Times (189 stories) and the Washington Post (136 stories). The story count represents articles obtained from the Nexis and VuText computer databanks after a full-text search for the phrases "Exxon Valdez" and "oil spill" during the period between March 24 (date of the spill) and September 30, 1989. The retrieved articles include editorials, columns, staff and wire compilations and (except for the Washington Post) wire service stories as well as bylined, staff-written news stories.

[2] Edward S. Herman and Noam Chomsky, Manufacturing Consent. New York: Pantheon, 1988.

[3] Harvey Molotch and Marilyn Lester, "News as Purposive Behavior: On the Strategic Use of Routine Events, Accidents, and Scandals," American Sociological Review 39 (February 1974):101-112; and "Accidental News: The Great Oil Spill as Local Occurrence and National Event," American Journal of Sociology 81 (September 1975):235-260.

Two main themes:

[4] See, for example, David L. Altheide, Creating Reality: How TV News Distorts Events (Beverly Hills, CA: Sage, 1976); Herbert Gans, Deciding What's News: A Study of CBS Evening News, NBC Nightly News, Newsweek and Time (New York: Vintage, 1979); Todd Gitlin, The Whole World is Watching: Mass Media in the Making & Unmaking of the New Left (Berkeley, CA: University of California Press, 1980); Gaye Tuchman, Making News: A Study in the Social Construction of Reality (New York: Free Press, 1978); .

[5] Philip Patterson, "Reporting Chernobyl: Cutting the Government Fog to Cover the Nuclear Fog." In Lynne Masel Walters, Lee Wilkins and Tim Walters,

Eds., Bad Tidings: Communication and Catastrophe. Hillsdale, NJ: Lawrence Erlbaum, 1989.

[6] Lee Wilkins, Shared Vulnerability: The Media and American Perceptions of the Bhopal Disaster. New York: Greenwood, 1987.

[7] The stories were obtained from the Pulitzer office at Columbia University. Although Pulitzer entries are ordinarily limited to 10 stories, the Seattle Times entry included 10 additional stories as "explanatory material." These additional stories by Eric Nalder about tanker safety were specifically included in the award.

[8] The journalists were Gary Shepard and Joel Buchwald of ABC, Steve Heimel of Alaska Public Radio, Charles Wohlforth of the Anchorage Daily News, Brian Akre of the Associated Press, Tamara Jones of the Los Angeles Times, Ed Bennett of KTUU Television in Anchorage, Bryan Hodgson and Natalie Fobes of the National Geographic Magazine; Tom Horton, who wrote a 32,000 word story about the spill for Rolling Stone magazine; Gary Blonston of the San Jose Mercury News, and Ross Anderson, David Boardman, Bill Dietrich, Mike Fancher, Mary Anne Gwinn, Alex McLeod and Eric Nalder of the Seattle Times.

[9] One of the scientists asked not to be named because of his pending testimony about litigation related to the spill. The other ten were Judy Capuzzo of the Woods Hole Oceanographic Institute in Massachusetts; Megan Dethier and David Duggins of the University of Washington; Charles Eaton, who operates an oceanographic research company in Seattle; Usha Varanasi, director of the Environmental Conservation Division of the National Oceanic and Atmospheric Administration; Ed Wenk, a retired presidential science advisor in Seattle; and Jerry Galt, David Kennedy, Jacqueline Michel (under contract with NOAA) and John Robinson of the National Oceanic and Atmospheric Administration.

[10] This includes sources who appeared in any of the evening network TV newscasts between March 24 and September 30, 1989. Of the 186 sources who appeared in these soundbites, 85 were also named as sources in one or more of the four newspapers.

[11] Twenty of the sources named by more than one reporter who did not receive surveys are described in news stories as Exxon employees. Exxon's Anchorage public relations office recommended to Exxon USA's Houston office that the corporation participate in the survey, but Exxon officials in Houston decided not to follow that recommendation.

[12] Personal interview, John Robinson, National Oceanic and Atmospheric Administration (NOAA), Seattle, November 30, 1989. Robinson is in charge of the hazardous materials branch of NOAA, which is the primary government body that oversees scientific research about the effects of oil spills.

[13] Most images of dead otters for evening network TV newscasts were not shot by network photographers, but by John Hyde, a videographer for the Alaska Department of Fish and Game. Hyde also shot much of the impacted bird video used by the networks (Personal communication with John Hyde, who identified his work from a videotape of all evening network video of impacted birds and otters used by the three networks during the six-month period).

Table 1
Categorization of Sources in Newspaper Stories about the Exxon Valdez Oil Spill[1]

Category	Number of Sources	Number of Stories	Number of Citations	Citations per Source
Government	102 (40.2%)	531 (48.9%)	1,574 (51.1%)	15.4
Oil Industry	46 (20.5%)	223 (18.1%)	684 (22.2%)	14.9
Scientists	21 (8.3%)	81 (7.5%)	234 (7.6%)	11.1
Fishermen	16 (6.2%)	59 (5.4%)	146 (4.7%)	9.1
Environmentalists[2]	20 (7.8%)	57 (5.2%)	112 (3.6%)	5.6
Affected Business	11 (4.3%)	32 (2.9%)	92 (3.0%)	8.3
Individuals	16 (6.2%)	35 (3.2%)	81 (2.6%)	5.1
Animal Rescue	9 (3.5%)	25 (2.3%)	58 (1.9%)	6.4
Oil Experts[3]	6 (2.3%)	21 (1.9%)	47 (1.5%)	8.9
Legal Experts	5 (1.9%)	18 (1.7%)	44 (1.4%)	8.8
Media Observers	2 (0.8%)	4 (0.4%)	8 (0.3%)	4.0
Totals	254 (100%)	1,086 (100%)	3,080 (100%)	12.1

1 - Sources named by more than one reporter in stories published by the four newspapers or broadcast on the three evening network newscasts between March 24 and September 30, 1989.

2 - Representatives of established environmental groups such as the Sierra Club.

3 - Oil experts not paid directly by the oil industry.

Table 2
Sources Named in More than 10 Stories in the four Newspapers, 3/24/89-9/30/89

Name	**# Stories**	**Affiliation**
1) Sources Representing the State of Alaska: 120 stories.		
Dennis Kelso	42	Commissioner of Environmental Conservation
Steve Cowper	30	Governor
Bill Lamoreaux	13	Department of Environmental Conservation
John Devens	12	Mayor of Valdez
Tim Kelly	12	President, Alaska State Senate
David Ramseur	11	Spokesman for Alaska Governor Steve Cowper
2) Sources Representing the Bush Administration: 91 stories.		
Admiral Paul Yost	18	Coast Guard Commandant
William Reilly	14	EPA Administrator
Commander Stephen McCall	13	Valdez Coast Guard Commander
Steve Goldstein	12	Interior Department Spokesman
Admiral Clyde Robbins	12	Federal On-Scene Coordinator
George Bush	11	President
Samuel Skinner	11	Secretary of Transportation
3) Sources Representing the Oil Industry: 72 stories.		
Frank Iarossi	39	President, Exxon Shipping Company
Don Cornett	22	Head of Exxon's Alaska Office
Lawrence Rawl	11	Exxon Chief Executive Officer
4) Sources Representing The Federal Scientific Effort: 23 Stories.		
David Kennedy	12	Chief of NOAA Spill Response Team
Jacqui Michel	11	NOAA Spill Expert
5) Source Representing the Congressional Response: 14 Stories.		
George Miller	14	Chair, House Interior Subcommittee on Water, Power & Offshore Energy

Table 3
Means on Attitude Scales: Reporters, Sources and Institutional Elites

1 = "Strongly Disagree" 9 = "Strongly Agree"

Statements about Coverage	Reporters N=50	Sources N=135	Alaska Gov't Sources N=37	Bush Admin. Sources N=11	Oil Industry Sources N=9
It's one of the major disasters of the century.	5.28^^{1}	6.27	6.27	6.73	3.44^{***2}
The major damage is the perception of damage	3.31	4.18	2.89^{***2}	6.73^{***2} +++3	8.22^{***2} +++3
The real story: this was a pristine place before, now it has pollution.	4.74^^{1}	5.71	5.43	5.09	4.33
Exxon has probably done as well as anyone could have in coping with the awful mess.	3.69^^^{1}	4.96	4.63	7.81^{***2} +++3	6.78^{*2} +++3
The Exxon Valdez disaster means Congress cannot legitimately open the Arctic National Wildlife Refuge to oil exploration.	3.80	3.66	3.14	2.09^{*2} +3	1.00^{***2} +++3
Newspaper stories about the spill were generally objective, not sensational.	6.47^^^^{1}	4.91	5.59^{*2} +3	3.27^{**2} +++3	2.56^{**2} +++3
Newspaper accounts generally went beyond the basic facts and did a good job of interpreting the spill in terms of relevant issues.	6.42^^^^{1}	5.27	5.45$_{+3}$	3.82^{*2} +++3	3.33^{**2} +++3
The two stories quoting me are accurate and complete (composite of 6 variables).	——	6.87	6.85	5.80	5.89^{*2}

Note: ^,*,+ $p \leq .05$, ^^,**,++ $p \leq .01$, ^^^,***,+++ $p \leq .001$. Two-tail t-test.

1 Significant difference between reporters and sources (^).

2 Significant difference between institutional elites and other sources (*).

3 Significant difference between institutional elites and reporters (+).

Table 4
Sources' and Reporters' Assessment of Statements Describing News Coverage

1 = "Strongly Disagree 9 = "Strongly Agree"

While conflict increases awareness of a topic, it may not necessarily lead to increased understanding of the underlying issues. The conflict itself, as a conflict, becomes the issue. (Philip J. Tichenor, George A. Donohue and Clarice N. Olien, Community Conflict and the Press. Beverley Hills, CA: Sage, 1980, p. 80).

GROUP	N	MEAN	SD	T	DF	P
Sources	126	7.16	1.98	2.62	170	0.009
Reporters	46	6.24	2.18			

Industrial accidents tend to be blamed on aberrant individuals, sloppy corporate practices or unfortunate decisions. They seldom foster much discussion of fundamental problems in the organization and regulation of industry or distortions in the allocation of resources that can lead to neglect of public safety. (Dorothy Nelkin, Selling Science. New York: W. H. Freeman, 1987, 71).

GROUP	N	MEAN	SD	T	DF	P
Sources	123	6.98	2.24	4.13	167	0.000
Reporters	46	5.37	2.28			

The media tend to gut the environment of scientific value by presenting it as a disaster, as a conflict of personalities. (Comment by Bryan Hodgson of National Geographic Magazine, who spent six months covering the spill).

GROUP	N	MEAN	SD	T	DF	P
Sources	121	5.96	2.13	2.89	164	0.004
Reporters	45	4.87	2.27			

Table 5
Sources in Pulitzer-Winning Coverage Compared to Sources in Other Stories

Category	Percentage of Sources	
	In The Pulitzer Stories	In The four Newspapers[1]
Government	34.7% (N=50)	40.2% (N=102)
Oil Industry	20.8% (N=30)	20.5% (N=46)
Scientists	0.7% (N=1)	8.3% (N=21)
Fishermen	9.0% (N=13)	6.2% (N=16)
Environmentalists[2]	2.7% (N=4)	7.8% (N=20)
Affected Business	1.4% (N=2)	4.3% (N=11)
Individuals	6.3% (N=9)	6.2% (N=16)
Animal Rescue	0.0% (N=0)	3.5% (N=9)
Oil Experts[3]	20.1% (N=29)	2.3% (N=6)
Legal Experts	1.4% (N=2)	1.9% (N=5)
Media Observers	0.0% (N=0)	0.8% (N=2)
Totals	100% (N=144)	100% (N=254)

1 - Among sources named by more than one reporter in stories published by the four newspapers or broadcast on the three evening network newscasts during the six months following the spill.

2 - Representatives of established environmental groups such as the Sierra Club.

3 - Oil experts not paid directly by the oil industry.

Table 6

Reporter's Comparison of The State of Alaska and Exxon as News Sources

1 = "Strongly Disagree" 9 = "Strongly Agree"

Frank Iarossi of Exxon was a good source (comment from an interview with Gary Shepard of ABC, Valdez, Alaska, September 14, 1989. Iarossi was named in more stories about the spill than any other oil industry source).

N	MEAN	SD	T	DF	P
26	3.65	2.56	-7.29	25	0.000
	6.77	1.82			

The Alaska Department of Environmental Conservation was a good source and happy to talk with reporters (another comment from an interview with Gary Shepard of ABC, Valdez, Alaska, September 14, 1989. The Alaska Department of Environmental Conservation was the major organizational news source representing the State of Alaska).

Note: this response represents the 31 of 50 responding reporters who covered the story from Valdez, Alaska immediately after the spill.

Routinization, Cooptation and Conflict:

Environmental Stories in Two Agricultural Magazines

by

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"Routinization, Cooptation, and Conflict:

Environmental Stories in Two Agricultural Magazines"

Media coverage of social movements and social conflict can reveal important interrelationships among media systems and social institutions.[1] Studies of mass media coverage of social movements and conflict generally conclude that the media resist social change by criticizing groups that disrupt the social order.[2] News organization are thought to serve larger forces in society, and are "agents of power, lacking in independence." [3] In times of conflict, news organizations are shown to be committed "to private property relations...to a national security state...to reform of selected violations of the moral code..."[4]

Most studies of media coverage of conflict focus on general interest, mass circulation media. Several studies have analyzed magazine coverage of the environmental movement.[5] Trade publications have not been studied in this context.

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[1] Jack M. McLeod, Jay G. Blumler, "The Macrosocial Level of Communication Science", in Charles R. Berger and Steven H. Chaffee, eds., Handbook of Communication Science (Newbury Park, California: Sage, 1987), pp. 271-322.

[2] Herbert Gans, Deciding What's News: A Study of CBS Evening News, NBC Nightly News, Newsweek, and Time (New York: Random House, 1979) pp. 53-55; C.N. Olien, P.J. Tichenor and G.A. Donohue, "Media Coverage and Social Movements" in C. Salmon, ed., Mass Media and Information Campaigns, (Beverly Hills: Sage, 1989); P.J. Tichenor, G.A. Donohue and C.N. Olien, Community Conflict and the Press, (Beverly Hills: Sage, 1980)..

[3] J. Herbert Altschull, Agents of Power: The Role of the News Media in Human Affairs (New York: Longman, 1984), p. 128.

[4] Todd Gitlin, The Whole World Is Watching, (Berkeley: University of California Press, 1980), p. 258.

[5] Liz McGeachy, "Trends in Magazine Coverage of Environmental Issues, 1961-86" Journal of Environmental Education pp. 6-13; Glenn G. Strodthoff, Robert P. Hawkins, and A. Clay Schoenfeld, "Media Roles in a Social Movement: A Model of Ideology Diffusion," Journal of Communication, 35(2) pp. 134-153; James S. Bowman and Kathryn Hanaford, "Mass Media and the Environment Since Earth Day" Journalism Quarterly (Spring 1977) 54: 160-165.

Many of the early battles of the environmental movement were between public interest groups and industries. In the early 1960's, agrichemical manufacturers were engaged in conflicts with environmentalists.[6] Trade publications representing industries in conflict with the environmental movement would seem to provide the ideal setting for a structural analysis of media coverage of social movements.

This paper uses social structural models to examine interrelationships among media systems and social institutions, using agricultural magazine coverage of environmental issues as a setting. When compared to a general interest news magazine, agricultural magazines would be expected to favor industry and governmental authority groups over non-official sources such as environmental and conservation groups. The amount of conflict appearing in environmental stories would be expected to vary, and finally, the amount of coverage of environmental topics would be expected to vary over time for both types of magazines.

Historical context. The agricultural industry did not take the environmental movement seriously until Rachel Carson's Silent Spring was published in 1962. Carsons' writings faulted chemical companies, the USDA, and agricultural colleges for contributing to extensive environmental problems caused by persistent pesticides such as DDT. Publicity following publication of Silent Spring galvanized the development of environmental interest groups that challenged agribusiness. By 1964, the challengers were gaining scientific and political legitimacy, and a vocal public constituency. [7]

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[6] Katherine Reichelderfer and Maureen Kuwano Hinkle's "The Evolution of Pesticide Policy: Environmental Interests and Agriculture", pp. 147-173, in Carol S. Kramer, ed. Political Economy of U.S. Agriculture: Challenges for the 1990's (Washington, D.C.: National Center for Food and Agricultural Policy, Resources for the Future, 1989).

In the mid-60's, the agricultural industry began to show considerable resistance to the threat of externally imposed restrictions on pesticide use. One agricultural magazine appealed to its readers' sense of individualism when alerting them to the threat of more restricted use of pesticides:

> "Don't take lightly the threat posed by well-organized groups that are determined to pass laws curbing your right to use chemicals on your farm. Washington is under more and more pressure from wildlife interests, food faddists, and a variety of poorly informed do-gooders." [8]

During the more intense periods of the conflict, the agricultural magazines portrayed farmers and chemical companies as allies in the war against environmentalists:

> "Farmers may find themselves in a battle alongside chemical companies to hang onto the right to use certain pesticides...Can farmers live with such an arbitrary ban on pesticides that are in such wide use?".[9]

Mass media are rarely capable of creating perfect consensus. At least one reader criticized the magazines' combative attitude:

> "...your policy used to be to work with nature, rather than going against. These later years I have had to watch the

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[7] Reichelderfer and Hinkle, op. cit.; Rachel Carson, Silent Spring (Greenwich, Conn: Fawcett, 1962).

[8] Successful Farming, April, 1965, p. 11.

[9] Wallaces' Farmer, Jan. 24, 1970, p. 16.

chemical and fertilizer tycoons ruin all of our natural environment, contaminate our water, and kill off most of our birds ... I am reluctantly discontinuing my subscription."[10]

Cooptation. The first of a number of state-level bans on DDT occurred in 1969 in Wisconsin. Later that year, the Nixon administration announced intent to phase out nonessential uses of DDT within two years and charged the USDA with the implementation. 1969 was threshold year for policy change. [11] The environmental movement could be said to have become coopted into the social system with the creation of what was to become the Environmental Protection Agency in 1969. Cooptation is conceptualized as a means of controlling the degree of change brought to the social system by creating bureaucracies that manage conflict at a level that does not disrupt the status quo.[12]

In the years since 1970, the environmental movement achieved widespread public support, at least in principle. As evidence of the degree to which the environmental movement had become coopted, even agricultural chemical dealers began to call themselves environmentalists in the late 1980's. This editorial was from a magazine directed at fertilizer and chemical businesses:

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[10] Wallaces' Farmer, March 14, 1970, p. 97.

[11] Reichelderfer and Hinkle, op. cit.

[12] Olien, Tichenor and Donohue, 1989, pp. 148-9, refer to the process as "structural accommodation".

> "You are an environmentalist. You may not think of yourself that way, but everyone who handles fertilizer and agricultural chemicals is on the front line when it comes to protecting the environment ... Are you communicating to your employees, your customers, and the community about the steps you've taken to make your business environmentally safe? 'Making safety work for you' [a special section in the magazine] describes various ways to communicate to those who are judging your business that you're an environmentalist and everything about your business is environmentally in balance."[13]

The cooptation of the environmental movement was also reflected by the widespread public support of strong environmental controls, and equally widespread aversion to the personal sacrifice required to enact the controls. Eventually, concern for the environment spread beyond the elite groups who initiated the movement.[14]

In an analysis of environmentalist-conservationist magazines and general interest magazines, Strodhoff, Hawkins and Schoenfeld noted that the period of institutional change, 1970, was preceded by the period of greatest increase in environmental content in environmentalist magazines, and was followed by comparable increases in content in general audience magazines.[15] The amount of content then "equilibrated" in a stage the authors called "routinization". Strodhoff, Hawkins, and Schoenfeld stated that the various waves of increasing content were unrelated to world events, indicating a possible agenda-setting influence from environmentalist to general audience magazines.[16]

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[13] Solutions, February, 1989, p. 8.

[14] James E. Grunig, "Communication Behaviors and attitudes of environmental publics: Two Studies" Journalism Monographs 81: March 1983; Judi Ann Caron, "Environmental Perspectives of Blacks: Acceptance of the New Environmental Paradigm", Journal of Environmental Education 20(3):21-26 (Spring, 1989).

[15] Strodthoff, Hawkins, and Schoenfeld, op. cit. p. 146.

Lippmann argued that news media tend to ignore social issues until they come under the jurisdiction of public authorities. News is conceived of as less of a 'mirror of social conditions' than the result of an "established machinery of record".[17] News coverage of the environmental movement would be expected to increase after bureaucratic structures become established.

H1. The percentage of environmental stories would be larger after institutional structures have been established in the late 1960's.

Structure and conflict. Coopted movements in pluralistic social systems are likely to engage in low levels of conflict as various organizations with different amounts of social power and legitimacy struggle to influence decisions about regulation and resources. Although conflict levels are likely to vary within the social system, conflict in pluralistic societies is not likely to result in major changes to the social order, especially when the conflict is managed by social institutions such as the courts or mass media.[18]

The mass media frequently play a role in controlling conflict, as opposed to initiating conflict.[19] Conflict is controlled and the status quo is upheld as news organizations rely primarily on purposive, routinized sources representing institutional organizations.

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[16] Ibid. p. 147.

[17] Walter Lippmann, Public Opinion (New York: Free Press, 1922).

[18] G. A. Donohue, P. J. Tichenor, and C. N. Olien, "Mass Media Functions, Knowledge, and Social Control," Journalism Quarterly, 50: 652-59, (1973).

Olien, Donohue and Tichenor hypothesize that communities, as well as the newspapers in the communities, control conflict in different ways, depending on interacting variables of structural pluralism and the degree to which the editor of the medium is integrated within the community power structure. Small town value systems favor non-public resolutions of conflict, and favor authority groups over individuals, especially when conflict is involved. [20]

Newspapers serve communities based on geographic proximity. Agricultural magazines, on the other hand, serve homogenous 'communities' comprised of individuals with similar interests and vocations and who reside in rural communities. Consequently, the structural variables which constrain newspaper editors may not be the same as those which constrain magazine editors. Farm magazines would be expected to downplay conflict and to emphasize the official actions of authority groups in order to appeal to the values of the readers, most of whom live in rural areas.

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[19] G.A. Donohue, P.J. Tichenor, and C.N. Olien, "Gatekeeping: Mass Media Systems and Information Control," in F. Gerald Kline and P.J. Tichenor, eds., Current Perspectives in Mass Communications Research (Beverly Hills: Sage, 1972), p. 44.

[20] C.N. Olien, G.A. Donohue and P.J. Tichenor, "The Community Editor's Power and the Reporting of Conflict", Journalism Quarterly, 45:2, (Summer 1968), pp. 243-252. G. A. Donohue, C.N. Olien, and P.J. Tichenor, "Reporting Conflict by Pluralism, Newspaper Type and Ownership", Journalism Quarterly, 62:3 (Autumn 1985), pp. 489-499, 507.

H2. Agricultural magazines would print fewer stories in which conflict is expressed by one or more of the sources.

Routinization. Once the movement has been coopted, the pattern of coverage would be expected resemble coverage of any other institutionalized bureaucratic structure. Fishman maintains that deadline pressures and resource limitations cause news organizations to depend on 'bureaucratic subsidies' in which much of the work of the story is done by socially legitimated, bureaucratic institutions.[21]

In the case of environmental stories, bureaucratic structures in industry and government would be expected to dominate the definition of news in all mass media outlets. However, the proportion of bureaucratic sources would be expected to vary systematically throughout subsystems of the mass media, depending on the relationship of the subsystem to other social institutions. Agricultural magazines would be expected to use fewer non-official sources because of structural constraints including the homogeneity of the readership and the magazines' relationship to industry.

H3. Governmental authorities and industry groups will comprise the majority of sources for environmental stories in both agricultural and general interest magazines. Agricultural magazines will use a smaller percentage of sources that represent environmental or conservation groups.

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[21] Mark Fishman, Manufacturing the News (Austin, Texas: University of Texas Press, 1980), pp. 150-155. See also Leon V. Sigal, Reporters and Officials: The Organization of Politics of Newsmaking (Lexington, Mass: D.C. Heath, 1973); Gaye Tuchman (1973) "Making News By Doing Work: Routinizing the Unexpected", American Journal of Sociology 77, 660-679.

Method. Forty magazines were listed as circulation audited 'diversified farming and farm home magazines' in the Agrimedia listing of the Standard Rate and Data Service.[22] Successful Farming and Wallaces' Farmer were listed as having the largest paid circulation of magazines written specifically for the agriculturally productive north central United States. To provide a comparison to the agricultural magazines, Time magazine was chosen to represent general interest news magazines, and to give an indication of the degree of attention being given to environmental issues in the mainstream press.

Although Wallaces' Farmer and Successful Farming are typical agricultural magazines, and Time represents general interest news magazines, conclusions regarding content must be limited to the magazines studied for the periods studied. The research was designed as a pilot study of hypotheses that will be used for a more extensive analysis of the farm magazine system.

To test the hypothesis about a change in content over time, four time periods were sampled: The year 1960 represented coverage before structural accommodation of the movement: the establishment of the Environmental Protection Agency. Three years: 1970, 1980 and 1990, represent the period after the movement had become coopted. There are obvious limitations to a design that samples one year out of ten. However, as a pilot study of general trends in content, the design is adequate.

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[22] Standard Rate and Data Service "Consumer Magazine and Agrimedia Rates and Data", June 27, 1990.

A pretest of the two agricultural magazines revealed that most stories containing references to the environment occurred during the pre-spring planting period. Samples were drawn to take advantage of the cyclical nature of the coverage. For each time period, one issue of each magazine for the first four months of each year was coded, for a total of four issues per year per magazine. In all, 16 issues of each of the three magazines were coded, for a total of 48 issues.

All stories in all the issues were skimmed twice in order to select stories that contained reference to environmental issues, including: soil and water conservation, pollution, industrial accidents, recycling, consumer confidence in food products, consumer activism, animal welfare, and other related issues. The environmental stories were then subjected to further coding.

Stories that referred to an environmental issue were used as the population for an analysis of sources. Sources were operationally defined as individuals or organizations, either individually named or identified by organizational affiliation, who had statements either directly or indirectly attributed to them. Sources were coded according to their institutional affiliation. 'Official' sources were organizations or persons affiliated with state and federal agencies such as the USDA, Environmental Protection Agency, Soil Conservation Service, state pollution control agencies, federal and state-level elected officials, university agricultural specialists and extension personnel. 'Industry' sources included farmers, chemical companies, trade associations and industry lobbyists. 'Environmental' sources included conservation and wildlife associations, consumer boycotters, and environmental activists.

Often sources named other individuals or organizations that were on opposite sides of an issue. Stories were coded as containing conflict when one or more of the sources in the story blamed the another person or group for a problem, criticized another group or person, or made a negative comment or judgement about another person or group. Similarly, when the structure of the story made it obvious that two or more groups or individuals represent opposing viewpoints on an issue, the story was coded as containing conflict.

To check intercoder reliability, a sample of 25 of the environmental articles was coded by a second individual. Intercoder agreement was 87% for number of sources per story, 85.7% for presence of conflict in the story, and 100% for type of source.

Results. The first hypothesis maintained that the percentage of stories dealing with environmental issues in agricultural journals would increase after the movement became coopted. Table 1 demonstrates support for the hypothesis.

Table 1

Percent of stories containing references to environmental issues in one issue per month of the first four months of four years.

Wallaces' Farmer, *Successful Farming*

1960	1970	1980	1990
2.9 (n=722)	6.4 (n=514)	14.3 (n=684)	19.3 [a] (n=393)

Time

1960	1970	1980	1990
.3 (n=297)	4.1 (n=246)	2.5 (n=203)	9.7 [b] (n=257)

[a] chi square (1960 vs. combined 70, 80, 90) = 41.7, df = 1, $p < .001$

[b] chi square (1960 vs. combined 70, 80, 90) = 13.8, df = 1, $p < .001$

There was a significant increase in the proportion of stories with environmental references in both agricultural magazines and *Time* during the years after the establishment of the EPA in 1970. Although the trend appeared to be significantly linear in both cases, *Time* magazine showed more cyclical coverage of environmental issues than did the agricultural magazines.

The second hypothesis would expect variation in the amount of conflict appearing in media subsystems. Table 2 shows support for the hypothesis that agricultural magazines would favor more non-conflicting sources when compared to *Time.*

Table 2

Percent of stories containing conflict in environmental stories in Wallaces' Farmer, Successful Farming, and Time magazine for the first four months of 1970, 1980 and 1990.

Wallaces' Farmer Successful Farming	Time
23.2 (n=207)	55.6 [a] (n=45)

[a] chi square = 17.28, df = 1, p < .001

The above table is consistent with the hypothesis that the agricultural magazines downplay conflict in order to appeal to its homogenous, rural-based readership.

The last hypothesis refers to sources in environmental stories. The hypothesis expects agricultural magazines to favor industry sources over environmental or non-institutional sources. Table 3 demonstrates partial support for the hypothesis.

Table 3

Sources cited in stories mentioning environmental issues in Wallaces' Farmer, Successful Farming, and Time, in percent.

	Wallaces' Farmer Successful Farming	Time
official sources	48.2	44.3
industry sources	42	18.6
environmental sources	1.6	20.6
other	8.3	16.5
	(n=436)	(n=97)

chi square = 73.9, df = 3, p < .001

As expected, the percentage of official sources in environmental stories was not significantly associated with the type of magazine for the periods studied. The farm magazines used considerably more industry sources in environmental stories than did the news magazine. In Time magazine, environmental groups and environmental activists made up a considerable proportion of all sources cited. Agricultural magazines were significantly less likely to use environmental groups in stories.

Discussion. The significant increase in the percentage of environmental stories in the agricultural magazines and Time supports the hypothesis that cooptation in the form of the creation of a bureaucracy to contain a social movement is associated with increased media coverage. After the EPA was established, the environmental movement routinely came into contact with public authority. Consequently, the news media gained access to a steady source of bureaucratically legitimized news.

The rest of the hypotheses pertain to environmental stories in 1970, 1980 and 1990 issues.

There were significantly fewer stories containing conflict in agricultural magazines compared to the general interest magazine. This finding indicates that agricultural magazines were likely to downplay conflict in environmental stories, much as small town newspapers in homogenous communities restrict information about conflict in order to maintain the appearance of stability and to protect power relationships in the community.

As would be expected of a coopted movement, sources representing authority groups were predominant in both types of magazines. There was no reason to expect that agricultural magazines would be more likely to use official sources than any other news organization, since the process of routinization helps all news organizations meet deadlines and fill the pages of their magazines.

Industry groups were another major source of environmental stories in agricultural magazines. Relatively few environmentalists were quoted in farm magazine environmental stories. Agricultural magazines appeared to limit the debate about environmental issues to groups that represented institutional arms of the environmental movement, while the general interest magazine was more even-handed in its use of sources.

Agricultural magazines would be expected to focus on industry groups in most of its stories. However, environmental stories would seem to merit a different treatment. Most environmental conflicts involve a dispute between industry groups and 'outsiders' who purport to represent the public interest. A key theme of the environmental movement is the public's right to control its share of limited natural resources such as clean air and water. Environmentalist groups often invoke the ideals of interdependency using the metaphor of the 'spaceship earth'. Given the nature of the conflict, it would be reasonable to expect magazines that urge their readers to consider themselves to be 'environmentalists' to occasionally quote representatives of conservation and environmental groups. Instead, the two agricultural magazines covered the environmental stories in much the same way as they covered other stories, using primarily industry and governmental authorities as sources.

Conclusions. This pilot study used two agricultural magazines' coverage of environmental issues as a setting for an examination of interrelationships among media systems and social institutions. A combination of structural and organizational variables were used to test hypotheses about the content.

If the results from the present article were any indication of the relationship of social movements to industry publications, then trade magazine coverage of social movements could be expected to increase only after the movement has been coopted by the creation of a governmental bureaucracy.

The pattern of sources and conflict in environmental stories in agricultural magazines would seem to indicate that structural constraints limit the degree to which environmental ideals make their way into agricultural publications. Institutionally legitimized industry and government authority groups appeared to be in firm control of what was likely to be a slow rate of change in the application of environmental ideals to agriculture.

The relationships between social structure and content would be further understood by including a larger sample of magazines, and by including a larger number of observations throughout the years 1960 to 1990.

WHOSE PUBLIC INTEREST?: A STUDY OF ATTENTION TO WOMEN, MINORITIES AND AIDS IN ISSUE-RESPONSIVE COMMERCIAL TELEVISION PROGRAMMING,

1986-1988

A Study by the Philadelphia Lesbian and Gay Task Force

June 30, 1989

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ABSTRACT

WHOSE PUBLIC INTEREST?: A STUDY OF ATTENTION TO WOMEN, MINORITIES AND AIDS IN ISSUE-RESPONSIVE COMMERCIAL TELEVISION PROGRAMMING, 1986-1988

This study examined the amount of issue-responsive programming devoted to women and minorities, and to the issue of AIDS given by the following commercial television stations in Philadelphia: KYW-TV (3), WPVI-TV (6), WCAU-TV (10), WPHL-TV (17), WTXF-TV (29), and WGBS-TV (57). Based on an analysis of each stations' quarterly Issues/Programs Lists for 1986-1988, it was found that no stations listed specific issue-responsive programming which totalled more than 5.2% of their total broadcast time in a single year. The percentage of station-reported issue-responsive broadcast time which can be characterized as being devoted to a significant treatment of minority-oriented issues ranged from 2.6% to 30.6%. Issue-responsive attention to lesbian and gay people, as well as other minority groups, reveals a pattern of marginalization or invisibility. The percentage of specific reported issue-responsive programming time ranged from 0.0% to 3.1% for lesbian and gay persons, 0.7% to 10.8% for women, 0.0 to 16.6% for African-Americans, 0.0 to 6.2% for Latinos and Latinas, and 0.0 to 1.6% for Asian-Americans.

Attention to AIDS varies for each station but on the whole it has not received the amount of time required to address the significant dimensions of this major public health issue. For the majority of stations, significant public affairs treatment of the AIDS issue appears to have peaked in 1987, and, with the exception of WTXF-TV in 1987, no station listed more than 4.2% of their total issue-responsive programming as devoted to AIDS. There is evidence that suggests that coverage of AIDS has been at the expense of coverage of lesbian and gay issues; which may, on the one hand, perpetuate the association between a gay lifestyle and illness and/or death, and, on the other, further increase gay, and particularly, lesbian invisibility.

This study raises two important issues related to the effects of communications deregulation. First, the theory that the marketplace will serve diverse interests if allowed to operate without regulation is demonstrably false. Second, the reporting practices currently required of broadcasters make it difficult and costly for the public to gain access to program information adequate for a full evaluation of issue-responsive programming. Employment data reveal that stations at the highest levels of decision making continue to be dominated by white males, making it difficult for affected groups to get adequate coverage of their interests.

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1. Introduction

The objective of this study was to ascertain to what extent the Philadelphia commercial television media marketplace meets the public interest standard and to what extent it addresses the needs, issues and concerns of various minority groups, and one of the nation's major public health issues -- AIDS.

Local television stations have as a condition of license the responsibility to provide programming that is responsive and sensitive to the interests, concerns and experiences of the public generally including that of minority groups and/or communities that comprise the viewing audience. Broadcasters in return for use of the public's airwaves are required by law to be responsive to the diverse needs and interests of the "public" and to provide programming representative of the various segments or communities that exist among the total population living within a television station's broadcast area.

The groups that this study focuses on are women, African- Americans, lesbian women and gay men, Latinos and Latinas, and Asian-Americans. United States Census Bureau data for the Philadelphia SMSA (Appendix A) shows that women comprise 53.6% of the population; African-Americans, Latinos and Latinas, and Asian-Americans together, 40.5%. Lesbian and gay people represent approximately 10% of the total population (Kinsey, 1948 and 1953). Clearly, so-called "minority groups" together comprise a significant market segment whose issues and concerns are worthy of being addressed.

In order to determine how much time is devoted to issues of direct concern to these segments of the Philadelphia media market, this study utilized each commercial television station's quarterly Issues/Programs Lists for the period 1986-1988. The amount of time devoted to non-entertainment programming, particularly, locally produced programming, that seriously addresses women's and minority issues can be taken as an indicator of a station's performance in the area of issue-responsive programming.

Issue-responsive programming deemed by broadcasters themselves to be a significant treatment of local issues or concerns is minimal. The station that has specified the greatest total amount of time in its Issues/Programs Lists which is devoted to minority-related issue-responsive programming during the three years studied was WPVI-TV (an average of 328 hours each year out of a yearly total of 8372 hours). In descending order, the other stations specified the following 3-year average amounts in their Issues/Programs Lists: KYW-TV (215 hours out of 8546), WCAU-TV (79 hours out of 8736), WGBS-TV (65 hours), WPHL-TV (50 hours out of 8346) and WTXF-TV (50 hours out of 8580). When compared to the total amount of annual broadcast time for each station, no station listed more than 5.2% of their total broadcast time in a single year as being devoted to specific minority-related issue-responsive programming (441 out of 8546 hours on KYW-TV in 1987).

Over the three year period of this study reported issue-responsive programming that deals explicitly with various minority communities and their particular interests, concerns and experiences ranged from 2.6% of the total amount of programming specified in the Issues/Programs Lists (11 hours, 29 minutes) to 30.6% (24 hours, 12 minutes).

The figures that this study uses are based on the self-reported data which each station makes available in its public file. While, as a source of documentation about station performance, these Issues/Programs Lists may be neither comprehensive nor completely accurate, they do suggest that minority issue-responsive programming is a low priority.

The lists represent the best available data on a television station's issue-responsive programming commitments. It should also be emphasized that these lists are part of each station's public file and are sufficient documentation to establish a *prima facie* case concerning broadcasters' performance (Office of Communication of the United Church of Christ v. FCC and the United States of America Respondents and CBS Inc. et al. 779 F.2d (D.C. Cir., 1985).

Moreover, even if broadcasters were to assert that these figures represent acceptable amounts of total issue-responsive programming, the analysis of each station's attention to women, minorities and to AIDS reveals a pattern of invisibility and, at best, marginalization. The following analysis provides strong evidence that the Philadelphia commercial television marketplace on the whole has failed to serve the diverse interests of significant segments of the public.

2. Methodology

For the purposes of this study all of the quarterly Issues/Programs Lists of KYW-TV (3), WPVI-TV (6), WCAU-TV (10), WPHL-TV (17), WTXF-TV (29) and WGBS-TV (57) from 1986 to 1988 were examined and analyzed. With the exception of WHYY-TV (12), the PBS affiliate licensed to Wilmington, Delaware (see Appendix B), these stations represent the operant commercial stations in the Philadelphia market.

The quarterly Issues/Programs Lists required by FCC regulation are compiled by staff members at each station and, under these regulations, represent self-reported data on what each station publicly acknowledges to be its most significant treatment of issue-responsive programming. (See also Appendix C which describes programs or program segments specified by each station for a sample quarter.) It should be noted that the reporting practices of these stations vary and that definitions of "issue-responsive" programming also vary (see Section 4, below).

Before proceeding with the presentation of the major findings, it is necessary to clarify exactly what was being analyzed and what criteria were used in analyzing the descriptive and quantitative data contained in the quarterly Issues/Programs Lists.

This study reports on the total number of reported "issue-responsive" programs specifically described (e.g. by title and content) in the Issues/Programs Lists as well as the total amount of specifically cited broadcast time devoted to issue-responsive programming. Included in the category of "programs" (which will be used hereafter) were all locally-produced programs or program segments, varying in length from one minute to several hours, which were specifically cited (by title and content) in the Issues/Programs Lists. Not included in the analysis, therefore, are categories of programs which are merely listed without specific details concerning title, date and content of the program and/or segment. Network and syndicated programs were also included if specific information about particular programs was provided in the quarterly Issues/Programs Lists. Specific information describing the length and content of public service announcements (PSAs) was not included in any of the stations' public files and, therefore, not subject to analysis.

Obviously, the number of programs and program segments alone reveals very little about a station's commitment to issue-responsive programming. The total amount of time (based on actual times given or in lieu of actual times, approximate times) is more descriptive of the amount of attention given to minorities, women, and to AIDS. The calculation of amount of time also included, when it could be established, the rebroadcast of any program. Finally, to make the calculation of percentages easier, any reported times that specified seconds were rounded off to the nearest minute.

Several criteria were used to categorize programming that reflects minority concerns, issues, and/or experience. The following groups were the focus of the analysis: women, African Americans, lesbian and gay people, Latinos and Latinas, and Asian Americans.

Other minorities (for example, religious minorities, political minorities, white ethnic minorities, etc.) did not emerge in the analysis as major categories. Programs that dealt with these minority groups were placed in the category of "other". Only a few programs in this category addressed such groups as Native Americans, Italian Americans, Jewish Americans, Irish and Polish Americans. In addition, a few programs that dealt with discrimination against more than one particular minority or no clearly identifiable minority were also placed in this category. On the whole, very few programs were included in this category.

A primary criterion for inclusion was that the reference to a specific minority issue, concern or experience, had to be explicit. In other words, any program description that mentioned minority groups or communities by name was included in the analysis of minority oriented issue-responsive programming. The majority of the programs included for analysis were selected according to this criterion.

However, program descriptions that did not happen to mention a specific minority by name but did apparently address the question of heterosexism or homophobia, sexism, and/or racism or violence against minorities were also included in the analysis. In addition, programs that did not mention a specific minority but did apparently deal with anti-gay or lesbian violence, racially-motivated violence, rape, or domestic violence were also placed in the appropriate category.

Broadcasters' categorization of programs by "issues" (for example, "minority affairs") or program titles (for example, Puerto Rican Panorama) were not used to decide whether a program should be included or excluded. Nor, for that matter, were the names of persons mentioned in the program descriptions used as a criterion even though it may be possible to infer minority identity from a person's name. What this means is that the mere mention of person's name or the labelling of a program as "minority affairs" by the broadcasters did not automatically qualify that program as an example of minority-oriented issue-responsive programming.

In summary, only the criteria described above were applied to each and every program description regardless of the broadcasters' categorization of the program, the program's title, or the mention of a person's name. Because of the limitations of the descriptive data in the Issues/Programs Lists, we could not analyze the nature of the representation of minorities.

Finally, it must be noted that programs addressing issues of general concern -- such as illiteracy, drugs and crime -- were not included among minority-oriented programming unless such programs were specifically described as referring to minority issues, concerns or experiences as to that general issue. For example, even though minorities are clearly interested, as is everyone in the general population, in questions of drug abuse, a program on drug abuse would not be included unless its description in the Issues/Programs List dealt with minority issues in conjunction with the general issue of drug abuse.

3. Findings

In this section, we will present our findings for every station except WGBS-TV, which could not be included in the tables because the descriptive data in its quarterly Issues/Programs Lists was not codeable (see Section 4, below). Where appropriate, we will also emphasize those findings that pertain to the three network-affiliated stations that dominate the Philadelphia television market -- KYW-TV, WPVI-TV, and WCAU-TV.

The results of this study are represented in Tables 1-5, which follow the text of the study. The figures in these tables represent locally-produced issue-responsive programs which are specifically described in the Issues/Programs Lists (i.e. with title, date, time and brief content description). Some of the stations' Issues/Programs Lists contain indices which cite regularly scheduled public affairs programs which may well constitute issue-responsive programming of the sort we were interested in, but which could not be coded because of the lack of specific details. For example, WPVI-TV refers to regularly scheduled public affairs programming which amount to an average of approximately 14 hours per week, and WCAU-TV cites regular programs amounting to an average of 4 hours per week.

With the exception of KYW-TV, the figures in these tables represent locally-produced issue-responsive programs. KYW-TV was the only station that reported sufficiently detailed information about network or syndicated issue-responsive programs to permit coding of these programs. KYW-TV's non-local public affairs programming amounts to 3 hours in 1986, and 157 hours and 39 minutes in 1987 (which includes 120 hours of live network coverage of the Iran-Contra hearings).

WCAU-TV mentions *60 Minutes*, *West 57th St* and *48 Hours* in the introductory paragraph of their Issues/Programs List, and WTXF-TV also broadcasts several network programs, but no specific information about them was provided in its "Program Information Reports." Therefore, only locally-produced programs were included in the tables for these stations.

Overview of Issue-Responsive Programming

Table 1 summarizes the data on the amount of reported issue-responsive programming and the amount of reported women and minority oriented programming.

As Table 1 shows, no station reported specific issue-responsive programming which totalled more than 5.2% of their total broadcast time in a single year, or more than 3.9% as an average for all three years. The reported totals of specified issue-responsive programming time as a proportion of total broadcast time ranged from a low of 0.5% (WPHL-TV and WTXF-TV in 1987) to a high of 5.2% (KYW-TV in 1987). For all five stations over the 3 years studied, the average total amounts of issue-responsive programming detailed in the Issues/Programs Lists constitute 1.7% of total broadcast time.

The average number of hours per week specifically detailed in the Issues/Programs Lists by all five stations ranges from 0.7 hours (WPHL-TV in 1987) to 8.4 hours (KYW-TV in 1987, the year in which they broadcast 120 hours of the Iran-Contra hearings), for a combined average (of all three stations over all three years) of 2.7 hours per week. The combined average for the dominant three stations is only slightly higher (3.9 hours per week).

Table 1 also reveals what proportion of the total amount of public affairs programming specified in the Issues/Programs Lists is responsive to women and to various minority communities. Here the findings are less consistent. Of the top three, WCAU-TV reports the least amount of time devoted to issue-responsive programming as a whole but reports the highest 3-year proportion (26.5%) of that time devoted to minority-oriented programming. However, in no year was the percentage of specified minority public affairs programming on WCAU-TV greater than 30.6%. KYW-TV and WPVI-TV reported lower levels of attention to minority affairs, listing approximately 9% of their reported public affairs time as being devoted to minorities. It should be noted, however, that WPVI-TV lists the highest amount of specific public affairs programming in their Issues/Programs Lists, and despite a lower proportion of minority-related programs, lists more total hours devoted to minority issues than any of the other stations in the market. WPHL-TV (17.2%) and WTXF-TV (16.7%) reported slightly higher combined averages (than KYW-TV or WPVI-TV) but also reported the least amount of total public affairs and total minority affairs programming. The combined average amounts of specifically identifiable women and minority oriented issue-responsive programming as a proportion of total reported issue-responsive programming for all stations for the 3-year period is 15.8%.

If we leave aside the 1987 anomaly of the Iran-Contra hearings broadcast on KYW-TV, only WPVI-TV lists more than 2 hours per week on average of specific issue-responsive programming in their Issues/Programs Lists. If we look at the total number of hours of specified minority-related issue-responsive programming cited in the Issues/Programs Lists, only WPVI-TV lists more than an average of 1/2 hour per week (they list 30 hours per year, on average). Looking at minority-related issue-responsive programming, WCAU-TV specifies an average of 22 minutes per week, KYW-TV cites an average of 12 minutes per week, and WPHL-TV and WTXF-TV approximately 9 minutes per week.

Issue-Responsive Programming Devoted to Women and Minorities

Table 2 displays the breakdown of issue-responsive programming by each station for lesbian and gay persons, women, African Americans, Latinos and Latinas, and Asian Americans.

From this table it is clear that the percentage of reported time devoted to lesbian and gay people is extremely low, ranging from 0.0% (WPHL-TV in 1987 and 1988) to 3.1% (2 hours, 28 minutes on WCAU-TV in 1986) for the period 1986-1988. One station, WPHL-TV, listed a total of 15 minutes of lesbian/gay-related programming in the entire 3-year period, while the largest amount listed by any station was 4 hours and 38 minutes for the 1986 year, by WPVI-TV (for the 3-year period, however, WPVI-TV cited an average of 2.6 hours per year). In no instance did the amount of lesbian/gay-related programming cited amount to more than 3% of the total amount of programming specified in the Issues/Programs Lists, and in 12 out of 15 station-year totals (5 stations for 3 years) this figure was under 2%.

The total amounts of listed issue-responsive programming focussing on women's issues as a proportion of total issue-responsive programming ranges from 0.7% (3 hours on KYW-TV in 1987) to 10.8% (9:04 hours on WCAU-TV in 1987). The largest total amount of issue-responsive program time specified as dealing with women's issues was 12 hours and 21 minutes total for WPVI-TV in 1987, and three of the five stations listed a yearly total of less than 5 hours for each of the 3 years examined. In their 1988 Issues/Program List WCAU-TV cited only 1 hour and 4 minutes of issue-responsive programming concerning women's' issues.

The proportions of issue-responsive programming listed which dealt with African-Americans ranged from 0.0% (both WPHL-TV and WTXF-TV in 1987) to 16.6% (WTXF-TV in 1988). For two of the network affiliated stations (KYW-TV and WPVI-TV) this proportion never reached 6% in any of the three years. The amounts of program time reported in this category fluctuated a lot between years and within stations, but never reached 13 hours of total annual issue-responsive programming specified as dealing with African American concerns.

Issue responsive programming specifically descibed as being focussed on Latino concerns ranged from 0.0% to 6.2% of the programs listed in the Issues/Programs Lists. Only one station, WCAU-TV, lists as much as 2% of its issue-responsive progamming in this category over the three year period. KYW-TV reported a total of 30 minutes in this category in 1986 and nothing at all in 1987 and 1988. The highest amounts specified were approximately 4 and 1/2 hours each by WPVI-TV and WCAU-TV for the entire 1988 year, an average of less than six minutes a week. .

The pattern continues with programs specifically focussing on Asian-Americans: they represent between 0.0% to 1.6% of total reported issue-responsive programming. With the sole exception of WPVI-TV's listing of 5 hours in 1987, no station cited more than 1/2 hour of total issue-responsive programming focussing on Asian American concerns in any of the 3 years.

The results clearly show that women's and minorities' issues are marginalized or invisible in the flow of reported issue-responsive programming broadcast by all five stations.

Health and Medicine and AIDS-related Issue-Responsive Programs

Table 3 highlights the amount of coverage devoted to health and medicine issues, and, in particular, to AIDS. For this analysis, AIDS was defined as a public health issue and not as a "gay issue".

For four out of five stations, coverage of AIDS appears to have peaked in 1987. The percentage of health and medicine related program time reported as devoted to the issue of AIDS ranges from 0.6% (6 minutes on WCAU-TV in 1986 and in 1988) to 77.2% (6 hours, 41 minutes on WTXF-TV in 1987, which included a single 5-hour program). Only WPVI-TV appears to have increased its proportion of health and medicine coverage devoted to AIDS in 1988 (to 20.5%). However, this percentage increase is a function of the decline in total number of reported hours devoted to health and medicine; in fact, WPVI-TV reported slightly less time devoted to AIDS-related issue-responsive programming in 1988 (10 hours, 10 minutes) than it did in 1987 (10 hours, 38 minutes). KYW-TV, WPHL-TV and WTXF-TV appear to report very little time to health and medicine as a whole, with a small amount of that time on AIDS issues. WCAU-TV devotes slightly more time to health and medicine than KYW-TV, WPHL-TV, and WTXF-TV but very little time to AIDS. The only station which lists more than an average of 1 hour per week devoted to health and medicine related issue-responsive programming is WPVI-TV and therefore it is probably not surprising that they also list the largest amount of time devoted to AIDS-related issues.

The last column in Table 3 represents AIDS programs as a percentage of total specified issue-responsive program time. With the exception of WTXF-TV in 1987, no station devoted more than 4.2% of their total reported issue-responsive programming to AIDS. For WTXF-TV, the higher percentage (14.2%) is largely due to their low total reported public affairs programming and to one 5 hour program -- The AIDS Connection -- broadcast between 11:30 p.m. and 4:30 a.m.

AIDS-related Programming vs Lesbian/Gay-related Programming

Finally, we were also interested in the relationship between the amount of coverage of sexual minorities and the amount of coverage of AIDS. Specifically, we were interested to see if AIDS was defined as a "gay issue". Did increased coverage of AIDS lead to a decrease in coverage of lesbian and gay people? Table 4 provides some data that bear on this question.

If we compare the total amount of time listed as being devoted to lesbian women and gay men and the total amount of time devoted to AIDS for the years 1986 and 1987 for WPVI-TV, WCAU-TV and WPHL-TV, it does appear that when the amount of time devoted to AIDS increases (as it did in 1987), the amount of time devoted to lesbian and gay persons decreases. Moreover, for one of the top three stations (WPVI-TV), the amount of reported time devoted to lesbian and gay people dropped to its lowest level in 1988 compared to the 2 previous years, while coverage of AIDS in 1988 increased in terms of the percentage of health and medicine programming it represents. These results suggest that there is some validity to the claim that increased attention to the issue of AIDS has displaced programming responsive to the broad range of issues of concern to lesbian and gay people.

One plausible inference from this data is that AIDS is still regarded by producers and station management as a "gay issue" or disease, despite evidence, including the Surgeon General's Report, to the contrary. Thus, increased attention to AIDS may somehow justify or require a decrease in attention to sexual minorities because AIDS is defined as a "gay issue".

The point here is not that it is not a major health concern for gay males, but that gay males come to be represented primarily or exclusively as "victims" of AIDS (even though IV drug users, women, and children have also contracted the virus), and that the overall pattern of coverage of sexual minorities and AIDS perpetuates the association between a gay lifestyle and illness and/or death. Furthermore, this pattern of programming further increases lesbian invisibility.

4. Reporting Practices

Having examined and analyzed the content of the quarterly Issues/Programs Lists, it is important to comment on the effect of the FCC's diminished reporting requirements on the public's ability to have a voice in determining how its airwaves shall be used. The public has an established right to participate in the broadcast license renewal process. One key question for consideration is whether or not the quarterly Issues/Programs Lists enable the public to exercise that right. Another key question is whether or not the quarterly Issues/Programs Lists satisfy the minimal FCC reporting requirements. In other words, do the quarterly Issues/Programs Lists provide sufficient information in a format that enables members of the public to assess and evaluate the performance of both individual stations and the entire television station market?

Table 5 is a comparative review of each station's quarterly Issues/Programs Lists. For this analysis, each station's Issues/Programs List for the October through December 1988 quarter was used to represent a station's current reporting practices. However, information from previous quarterly Issues/Programs Lists was also utilized in order to be able to describe some of the variations in broadcasters' reporting practices over the period 1986-1988.

The first four columns of Table 5 show that two of six commercial television stations' quarterly Issues/Programs Lists (WPVI-TV and WPHL-TV) meet minimal FCC's reporting requirements (as indicated in the Notes to Table 5, below, we are employing the interpretation of FCC reporting requirements provided by the NAB legal counsel). KYW-TV, WCAU-TV, WTXF-TV, and WGBS-TV's lists had problems of missing or inconsistent data.

The remaining columns in Table 5 represent other kinds of specific information needed to do a full examination and evaluation of issue-responsive programming. Such information would include a schedule of regularly scheduled public affairs programs, the reporting of (as part of the program description) the duration of programs, program segments (such as news reports), editorials and editorial replies, documentaries, specials, and public service announcements, as well as information about any rebroadcast or repeat, and the source of the program (local, in-house; local, independent; syndicated; network, or consortium-produced). As can be seen from Table 5, the present state of quarterly issues/programs reporting is inadequate and insufficient for a full evaluation of issue-responsive programming broadcast in the Philadelphia market.

KYW-TV (3)

KYW-TV quarterly Issues/Programs Lists do not meet minimal FCC reporting requirements. For example, KYW-TV is inconsistent in its reporting of "type of programming" as required by the FCC. KYW-TV did not provide a coherent overview summarizing the community issues which received siginificant treatment in the station's issue-responsive programming nor did it include an index of all regularly scheduled "issue-responsive" programming. KYW-TV appears to have categorized its issue-responsive programming by individual specific program titles (for example, "Baby Crisis", "Priced Out", "National Public Service", etc.). KYW-TV did not report on the length, content or air dates of any public service announcements. It appears not to have broadcast any documentaries as part of its "issue-responsive" programming. Finally, while KYW states in its introduction to its quarterly issues/programs lists that all programs are local unless otherwise indicated, no specific information about program source is provided as part of its program descriptions.

WPVI-TV (6)

WPVI-TV's lists satisfy current, minimal FCC reporting requirements. Nevertheless, WPVI-TV's Issues/Programs Lists do not provide a coherent overview summarizing all community issues which received significant treatment in the quarter; rather, it categorizes programs by "issue" (for example, Economic & Employment Inequities, Problems with Education, Concern for Young People, Personal and Public Health Concerns, Need to Combat Crime and Improve Criminal Justice System, etc.).

It did not include segments within newscasts or editorials as part of its list of issue-responsive programming. Finally, WPVI did not report on the length, content or air dates of any public service announcements, nor did it report specific information about program sources. Like KYW-TV, WPVI-TV's program descriptions are too brief for full evaluation of issue-responsive programming.

WCAU-TV (10)

WCAU-TV's lists do not meet minimal FCC reporting requirements. For instance, WCAU-TV does not provide, as part of its program descriptions, complete information about air time and length of program. All times given are approximate, rather than actual. Moreover, WCAU-TV's reporting of "type of program" is inconsistent.

Like KYW-TV (3) and WPVI-TV (6), WCAU-TV does not provide a coherent overview of all community issues which received significant treatment in the quarter. Although scheduling information is provided, no specific duration is reported as part of the description of particular programs, news reports, or editorials. It is impossible to determine from the schedule provided how many times a particular editorial was rebroadcast. WCAU-TV does not appear to include documentaries in its lists and it does not report on the length, content or air dates of any public service announcements. Finally, like KYW-TV and WPVI-TV, WCAU-TV's program descriptions are too brief for full evaluation.

WPHL-TV

WPHL-TV (17) lists meet FCC minimal reporting requirements for the program description, air time, air date and duration of program, program title, and type of program. Compared to all other stations, WPHL-TV's lists are organized and highly readable. However, they do not provide a Program Schedule Index. The list of "issues" used to categorize issue-responsive programming includes, without specificity, "Education, Health, Youth, Women, Elderly, Housing/Environment, Culture, Minorities, Disabled, Economy, Politics.

WTXF-TV

WTXF-TV (29) (formerly WTAF-TV) lists do not meet FCC minimal reporting requirements. The public file contained a complete set of quarterly Issues/Programs Lists for the 1986 year and the first quarter of 1987. In this sampling, scheduling information was given absent specific air dates and times of particular issue-responsive programs. No specific times for items appearing within reported newscasts was provided.

In 1987, WTXF-TV began to use "Program Information Reports" complemented sporadically by a cover sheet. (Each program or program segment is described on a single sheet of paper). An example of one 1987 cover sheet reads as follows: "This file contains WTAF's Program Information Reports for the quarter...."

In the second quarter of 1988, a list of programs was included on the Program Information Report cover sheet. In the third quarter, in addition to a list of programs, a list of issues was included (e.g., Public Health/Safety/Welfare, Crime, Health, Women, and Families. For the last quarter of 1988, in addition to the list of issues, the following statement appeared on the cover sheet:

> "WTXF-TV continues to conduct and participate in quarterly ascertainment interviews of community leaders and representatives. This file contains programming responsive to the problems, needs and interests of communities served by station WTXF-TV. Further information follows:..."

No information about individuals or groups interviewed was provided in the lists. Each of the Progam Information Reports is grouped together using the categories Crime, Business/Economy, Government, Minority/Ethnic, Education, Women, Youth & Elderly.

Information about "program type" does not meet minimal FCC reporting requirements. The Progam Information Reports indicate only if an issue-responsive program was "News", "Public Affairs" or "Other." Editorials, documentaries, specials and public service announcements are not described in the lists. Program schedules or indices appear sporadically. Furthermore, to the best of our knowledge, Program Information Reports are not provided for network programs (*Fox News Extra, The Best of National Geographic, The Reporters, Beyond Tomorrow*, and *America's Most Wanted*).

In summary, since the information about issue-responsive programming (one page per program) was not summarized, the researcher's analysis of pertinent information was made extremely time consuming and difficult.

During the course of this research, WTXF-TV actively resisted the Philadelphia Lesbian and Gay Task Force's attempts to obtain copies of information in the public file. For instance, WTXF-TV's public affairs director told Task Force representatives that the public file for the 1986 through 1988 period consisted of about 4000 pages and that the cost for making copies for the applicable period would be $400.00. Despite the Task Force's request, the general manager refused to waive the fee.

WGBS-TV (57)

WGBS-TV (57), formerly WTAF-TV, lists did not meet FCC minimal reporting requirements. The shortcomings of WGBS-TV's lists were so great that information from them could not be included in our quantitative analysis. The first problem concerns missing lists; there were no quarterly Issues/Programs Lists in the WGBS-TV's public file prior to July 1, 1987. What follows is an extract from their list for July 1 through September 30, 1987:

> "For the period July 1, 1987 through September 30, 1987 inclusive, WGBS-TV aired public service programming and public service announcements which dealt with problems and issues directly affecting Philadelphia, Pennsylvania, New Jersey and Delaware's communities.
>
> The following is a list of five significant issues and representative programming aired to address those concerns. Also included in this report is a listing of all programs aired to date."

The rest of the document provides a description of only one "representative" segment of "Profiles" (the station's weekly 15-minute public affairs program) under the headings of "Social Service", "Education", "Current Social and Civic Events" and "Cultural Organizations." It should be noted that no "listing of all programs aired to date" was included or attached to the quarterly issues/programs list.

If WGBS-TV's list for October through December, 1988 is representative of current reporting practices, WGBS-TV does provide some of the information required, in part, by the FCC, but uses "public affairs" as a description of "program type". However, the program information was not organized in a way to be able to match the description of particular programs with specific air dates. Moreover, there was a tendency to describe entire "series" of programs rather than individual programs. While some of these "series" did represent minority issue-responsive programming, the descriptions were not codeable into the categories used for this study because specific information about particular issue-responsive programs airing on specific dates and at specific times was not provided. In addition, the lists did not contain any information about news segments, editorials, documentaries, specials, or public service announcements.

Summary of Reporting Practices

It is clear from the above analysis of each station's quarterly Issues/Programs Lists that reporting formats as well as the descriptive data on particular programs vary from station to station, making the examination and analysis of the number and amount of reported issue-responsive programs laborious and time-consuming even for a trained researcher.

Reporting on editorials and editorial replies was inconsistent or nonexistent. No information on content, length of air time, or air date was provided for public service announcements. The lists also presented problems of missing or inconsistent information and inadequate program descriptions, leaving the researcher with no choice but to extrapolate or estimate based on the available data.

In order for members of the general public to exercise their right to participate fully in the broadcast license renewal process, the establishment and enforcement of standardized and uniform reporting requirements that meet specific requirements for accuracy, detail, specificity, clarity and public access is essential. The reestablishment of public access to program logs, if standardized and uniform, could be useful in enabling citizens to have their voices heard in the marketplace.

5. Conclusion

Based on our analysis of public file documents which represent broadcasters' accounts of their most significant efforts in issue-responsive programming, we conclude that Philadelphia commercial television stations devote very little time to issues of direct concern to many of Philadelphia's diverse communities.

While it may be argued that commercial imperatives and the requirements of profitability override greater attention to non-entertainment programming, broadcasters have an important social and legal responsibility in a multicultural and democratic society to create a forum for discussion of issues of public importance, for controversial issues and for the "robust debate" of ideas and issues that are of direct concern to women and racial, sexual and cultural minorities living within the total population.

Before FCC television deregulation in 1984, the FCC set minimum guidelines for non-entertainment programming to assure that commercial broadcasters would meet their public trusteeship role in providing non-entertainment programming. In 1984, the FCC eliminated the 5-5-10 guideline which had required network affiliated and independent VHF stations (thus, all five stations examined in the present study) to allocate 5% of their air time to local programming, 5% to informational programming (news plus public affairs) and 10% to non-entertainment programming between 6 a.m. and midnight. "In eliminating the guideline, the FCC argued that 'market forces,' and not government regulation, could best assure that broadcasters operate in the public interest" (Donahue, "Shortchanging the Viewers," Appendix E, below).

Our study underscores the fallacy of the marketplace theory and shows that an unregulated Philadelphia commercial broadcast market does not serve the diverse interests of the majority of its listening audience.

Prior to deregulation, the public had the right of access to detailed, though not necessarily summarized, program logs which offered a more comprehensive view of broadcasters' performance and broadcasters' commitment to its community of license than anything which is now available.

In the present deregulated media environment, the public has no right of access to the public airwaves (except through ownership), no right of access to detailed program logs to assess broadcasters' performance, no right of response to personal attack and no right to a diversity of viewpoints on matters of public importance or of controversial issues on the public airwaves.

Members of the public must now rely on the goodwill or good-faith discretion of broadcasters to serve the public interest and on minimal FCC reporting requirements to assess the performance of that goodwill. Members of the general public, under deregulation, have the singular right to participate in the broadcast renewal license process (e.g. by filing petitions to deny relicensure) if the broadcaster has not met its obligation to serve the needs, interests and concerns of its community of license. And, in order to assess the broadcasters' performance, members of the public must establish a *prima facie* case based on evidence secured through public file research which, by FCC standards, meets the test of substantial and material fact.

In the absence of FCC regulation and in the presence of minimal FCC reporting requirements, this study has had to rely on non-uniform and incomplete data, which may or may not be a true representative sampling of issue-responsive programming.

The public file, nevertheless, represents broadcasters' self selected account of their most significant treatment of the issues of particular concern to its community of license -- the numeric majority of which consists of women and racial, sexual and cultural minorities.

Although the impact of deregulation on public affairs programming commitments is not completely known, our study is consistent with other studies which have shown that broadcasters, subsequent to FCC deregulation, are less inclined to provide public affairs programming (see Donahue, "Shortchanging the Viewers", Appendix E).

Another possible structural explanation for the lack of diversity in issue-responsive programming is the absence of women, racial minorities, and publicly-acknowledged lesbian women and gay men, among senior management at local television stations. Minorities and women may not have the opportunity to be involved in significant programming decisions. Appendix D which summarizes minority and female employment suggests that white males make up the majority of broadcasting employees. The absence of minorities and women as well as openly lesbian and gay people in these positions may partially account for the lack of attention to those same minorities in a station's issue-responsive programming.

Finally, we may draw some conclusions from the quality of the Issues/Programs Lists themselves. Broadcasters do maintain detailed programming logs for their own purposes but they are not made available in the public file. From the public's viewpoint, public file documentation, and the quarterly Issues/Programs Lists in particular, is a broadcaster's acknowledgement of its most significant treatment of community issues, needs and concerns. This form of disclosure is vital to evaluate and assess station performance in the area of non-entertainment or information programming.

Based on the quality of the documentation available for analysis in the public files, we conclude that current reporting practices make it difficult and costly to obtain access to program information adequate for a full evaluation of issue-responsive programming. The FCC's reporting requirements make it possible for broadcasters to avoid reasonable evaluation of their performance by the public whose interests they are licensed to serve.

NOTES FOR TABLE ONE

TABLE I: Review of Total Annual Broadcast Hours as Compared to Station Reported Issue Responsive Programming and Minority Issue Responsive Programming (All Stations/All Years)

SOURCE: Philadelphia, PA Commercial Television Stations Quarterly Issues/Programs Lists (IPL), 1986-1988.

The full titles of the categories are:

(1) Total annual broadcast hours, self-reported by commercial television stations in the Philadelphia market.

(2) Total reported issue responsive programming in hours derived from an analysis of IPL program descriptions

(3) Total number of reported issue responsive programs and program segments derived from an analysis of IPL program descriptions.

(4) Total reported issue responsive program hours as a percentage of total reported annual broadcast hours

(5) Average of reported issue responsive programming per week in hours

(6) Total reported minority-oriented issue responsive programming in hours and minutes

(7) Reported minority issue responsive program hours as a percentage of total reported issue responsive program hours.

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KYW-TV	TOTAL ANNUAL BROADCAST HOURS 1	TOTAL REPORTED ISSUE RESPONSIVE HOURS 2	TOTAL # REPORTED ISSUE RESPONSIVE PROGRAMS 3	% OF REPORTED TOTAL 4	AVERAGE REPORTED ISSUE RESPONSIVE HOURS PER WEEK 5	TOTAL REPORTED HOURS MINORITY PROGRMING HR:MIN 6	% OF MINORITY REPORTED ISSUE RESPONSIVE PROGRAMMING 7
1986	8546	98	379	1.1	1.8	13:43	13.9
1987	8546	441	763	5.2	8.4	11:29	2.6
1988	8546	106	811	1.2	2.0	10:09	9.5
WPVI-TV							
1986	8372	418	796	5.0	8.0	33:07	7.9
1987	8372	306	649	3.7	5.8	30:14	9.8
1988	8372	260	609	3.1	5.0	28:12	10.8
WCAU-TV							
1986	8736	79	272	0.9	1.5	24:12	30.6
1987	8736	84	318	1.0	1.6	20:10	24.0
1988	8736	73	357	0.8	1.3	18:45	25.6
WPHL-TV							
1986	8346	58	178	0.7	1.1	10:45	18.2
1987	8346	40	149	0.5	0.7	4:15	10.5
1988	8346	51	184	0.6	1.0	12:00	23.0
WTXF-TV							
1986	8580	53	547	0.6	1.0	5:27	10.3
1987	8580	47	762	0.5	0.9	6:02	12.8
1988	8580	49	558	0.6	0.9	13:19	27.2

TABLE 1: REVIEW OF TOTAL ANNUAL BROADCAST HOURS AS COMPARED TO STATION REPORTED ISSUE RESPONSIVE PROGRAMMING AND MINORITY ISSUE RESPONSIVE PROGRAMMING (ALL STATIONS-ALL YEARS)

SOURCE: PHILADELPHIA, PA COMMERCIAL TELEVISION STATIONS QUARTERLY ISSUES/PROGRAMS LISTS (IPL), 1986-1988

NOTES FOR TABLE TWO

TABLE 2: Review of Reported Issue Responsive Programming by Minority Group (All Stations/All Years)

SOURCE: Philadelphia, PA Commercial Television Stations Quarterly Issues/Programs Lists (IPL), 1986-1988.

The full titles of the categories are:

(1) Total reported time devoted to lesbian and gay issue responsive programming

(2) Lesbian and gay issue responsive program hours as a percentage of total reported issue responsive program hours

(3) Total reported time devoted to issue responsive women programs and program segments in hours and minutes

(4) Women issue responsive program hours as a percentage of total reported issue responsive program hours.

(5) Total reported time devoted to African-American issue responsive programs or program segments

(6) African American issue responsive program hours as a percentage of total reported issue responsive program hours.

(7) Total reported time devoted to Latina and Latino issue responsive programs in hours

(8) Latino and Latina issue responsive program hours as a percentage of total reported issue responsive program hours

(9) Total reported time devoted to Asian-American issue responsive programs in hours

(10) Asian-American issue responsive programs as a percentage of total reported issue responsive programming

(11) Total reported time devoted to "other," which includes issues related to multiple races and cultural groups together with white ethnic and religious minorities (e.g. Jewish, Italian, Irish, Polish-Americans)

(12) "Other" issue responsive program hours as a percentage of total reported issue responsive program hours.

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KYW-TV	TOTAL REPORTED LESBIAN/ GAY TIME HR:MIN 1	% 2	TOTAL REPORTED WOMEN TIME HR:MIN 3	% 4	TOTAL REPORTED AFRICAN AMERICAN TIME HR:MIN 5	% 6	TOTAL REPORTED LATINO/ LATINA TIME HR:MIN 7	% 8	TOTAL REPORTED ASIAN AMERICAN TIME HR:MIN 9	% 10	TOTAL REPORTED OTHER TIME HR:MIN 11	% 12
1986	2:00	2.0	4:30	4.6	5:30	5.6	0:30	0.5	0:30	0.5	0:43	0.7
1987	2:30	0.6	3:00	0.7	3:48	0.9	0:0	0.0	0:0	0.0	2:11	0.5
1988	1:00	0.9	4:42	4.4	4:15	4.0	0:0	0.0	0:12	0.2	0:0	0.0
WPVI-TV												
1986	4:38	1.1	11:08	2.6	12:30	2.9	3:36	0.8	0:30	0.1	0:45	0.1
1987	3:00	1.0	12:21	4.0	4:25	1.4	1:52	0.6	5:00	1.6	3:36	1.1
1988	0:30	0.2	8:15	3.1	11:35	4.4	4:23	1.6	0:20	0.12	3:09	1.2
WCAU-TV												
1986	2:28	3.1	6:20	7.9	12:56	16.3	1:58	2.4	0:30	0.6	0:0	0.0
1987	1:00	1.1	9:04	10.8	6:04	7.2	2:00	2.3	0:0	0.0	2:02	2.4
1988	2:02	2.7	1:04	1.4	9:33	13.0	4:36	6.2	0:30	0.6	1:00	1.3
WPHL-TV												
1986	0:15	0.4	2:45	4.7	6:45	11.5	0:0	0.0	0:0	0.0	1:00	1.7
1987	0:0	0.0	3:45	9.2	0:0	0.0	0:15	0.6	0:0	0.0	0:15	0.6
1988	0:0	0.0	4:15	8.2	5:00	9.7	0:15	0.4	0:0	0.0	2:30	4.8
WTXF-TV												
1986	0:04	0.1	3:34	6.7	1:11	2.2	0:03	0.1	0:10	0.3	0:25	0.8
1987	0:32	1.1	4:00	8.4	0:0	0.0	0:00	0.0	0:30	1.1	1:00	2.1
1988	0:33	1.1	4:11	8.5	8:14	16.6	0:05	0.2	0:0	0.0	0:16	0.5

TABLE 2: REVIEW OF REPORTED ISSUE RESPONSIVE PROGRAMMING BY MINORITY GROUP
(ALL STATIONS-ALL YEARS)

SOURCE: PHILADELPHIA, PA COMMERCIAL TELEVISION STATIONS
QUARTERLY ISSUES/PROGRAMS LISTS, 1986-1988: TOTAL REPORTED TIME

NOTES FOR TABLE THREE

TABLE 3: Review of Reported Health and Medicine and AIDS issue responsive programming compared to total reported issue responsive programs (All Stations/All Years)

SOURCE: Philadelphia, PA Commercial Television Stations Quarterly Issues/Programs Lists (IPL), 1986-1988.

The full titles of the categories are:

(1) Total reported number of Health and Medicine programs and program segments

(2) Total reported health and medicine programs and program segments in hours and minutes

(3) Total number of reported AIDS programs and program segments

(4) Total reported health and medicine programs in hours and minutes

(5) AIDS issue responsive programming as a percentage of total reported health and medicine programs.

(6) AIDS issue responsive programming as a percentage of total reported issue responsive programming

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KYW-TV	TOTAL REPORTED # HEALTH/ MEDICINE PROGRAMS 1	TOTAL HEALTH/ MEDICINE TIME HR:MIN 2	TOTAL AIDS REPORTED # PROGRAMS 3	TOTAL REPORTED AIDS TIME HR:MIN 4	AIDS AS % TOTAL HEALTH/ MEDICINE TIME 5	% TOTAL ISSUE RESPONSIVE PROGRAM TIME 6
1986	52	10:35	2	1:04	10.0	1.0
1987	78	19:08	27	5:19	27.8	1.2
1988	118	12:29	23	2:27	19.6	2.3
WPVI-TV						
1986	161	86:15	10	6:30	7.5	1.5
1987	118	60:28	24	10:38	17.5	3.4
1988	110	49:30	23	10:10	20.5	3.9
WCAU-TV						
1986	35	16:36	3	0:06	0.6	0.1
1987	36	19:26	7	3:04	15.7	3.6
1988	36	15:29	3	0:06	0.6	0.1
WPHL-TV						
1986	36	9:00	2	0:30	1.3	0.8
1987	37	10:15	4	1:45	17.0	4.2
1988	30	7:30	2	0:30	6.6	1.0
WTXF-TV						
1986	33	10:48	10	2:09	19.9	3.8
1987	43	8:39	25	6:41 *	77.2	14.2
1988	32	6:39	6	0:10	2.5	0.3

* INCLUDES 5 HR. PROGRAM: "THE AIDS CONNECTION" (7/24/87, 11:30 P.M.-4:30 A.M.)

TABLE 3: REVIEW OF REPORTED HEALTH & MEDICINE & AIDS ISSUE RESPONSIVE PROGRAMMING COMPARED TO TOTAL REPORTED ISSUE RESPONSIVE PROGRAMS (ALL STATIONS-ALL YEARS)

SOURCE: PHILADELPHIA, PA COMMERCIAL TELEVISION STATIONS QUARTERLY ISSUES/PROGRAMS LISTS, 1986-1988

NOTES FOR TABLE FOUR

TABLE 4: Reported Issue Responsive Program Time Compared to Lesbian and Gay, Health and Medicine and AIDS Issue Responsive Program Time (All Stations/All Years)

SOURCE: Philadelphia, PA Commercial Television Stations Quarterly Issues/Programs Lists, 1986-1988.

The full titles of the categories are:

(1) Total number of reported issue responsive programs and program segments in hours.

(2) Total number of lesbian and gay issue responsive programs and program segments in hours and minutes

(3) Total lesbian and gay programs as a percentage of total issue responsive program time

(4) Total number of reported health and medicine issue responsive programs and program segments in hours and minutes

(5) Total AIDS issue responsive programs and program segments in hours and minutes

(6) AIDS programs and program segments as percentage of total reported health and medicine issue responsive programs or program segments

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KYW-TV	TOTAL REPORTED ISSUE RESPONSIVE PROGRAM HOURS 1	TOTAL LESBIAN/ GAY TIME HR:MIN 2	LESBIAN/GAY % TO TOTAL IR TIME 3	TOTAL HEALTH/ MEDICINE TIME HR:MIN 4	TOTAL AIDS TIME HR:MIN 5	AIDS % TO HEALTH/ MEDICINE TIME 6
1986	98	2:00	2.0	10:35	1:04	10.0
1987	441	2:30	0.5	19:08	5:19	27.8
1988	106	1:00	0.9	12:29	2:22	19.6
WPVI-TV						
1986	418	4:38	1.1	86:15	6:30	7.5
1987	306	3:00	0.1	60:28	10:38	17.5
1988	260	0:30	0.2	49:30	10:10	20.5
WCAU-TV						
1986	79	2:28	3.1	16:36	0:06	0.6
1987	84	1:00	1.1	19:26	3:04	15.7
1988	73	2:02	2.7	15:29	0:06	0.6
WPHL-TV						
1986	59	0:15	0.4	9:00	0:30	5.6
1987	41	0:0	0.0	10:15	1:45	17.0
1988	52	0:0	0.0	7:30	0:30	6.6
WTXF-TV						
1986	42	0:04	0.1	10:48	2:09	19.9
1987	30	0:32	1.1	8:39	6:41	77.2
1988	38	0:33	1.1	6:39	0:10	2.5

TABLE 4: TOTAL REPORTED ISSUE RESPONSIVE PROGRAM TIME COMPARED TO LESBIAN & GAY, HEALTH/MEDICINE & AIDS ISSUE RESPONSIVE PROGRAM TIME (ALL STATIONS-ALL YEARS)

SOURCE: QUARTERLY ISSUES/PROGRAMS LISTS, 1986-1988:
PHILADELPHIA, PA COMMERCIAL TELEVISION STATIONS

NOTES FOR TABLE FIVE

TABLE 5:	Comparative Review of Broadcasters' Reporting Practices
SOURCE:	Philadelphia, PA Commercial Television Stations Quarterly Issues/Program Lists, 1986-1988.

The full titles of the categories are:

(1) Program description

(2) Description of the program listing the time, date, and length of each program

(3) The program title

(4) The type of programming in which the issue was treated (e.g. news report or story, news special, news interview, interview/discussion format, documentary, call-in show, magazine format, live coverage)

(5) Program schedule or index showing placement of all regularly scheduled issue-responsive programs or program segments

(6) The duration (length of time) of interview/discussion shows or magazine format shows

(7) The duration of news reports or segments within newscasts

(8) The duration of editorials or editorial replies

(9) The duration of documentaries

(10) The duration of specials

(11) The duration of public service announcements

(12 through 16)
Specific information about the rebroadcast of interview/discussion or magazine format shows, news reports or segments within newscasts, editorials and editorial replies, documentaries, and public service announcements

(17) Program source (e.g. whether source of program was local in-house or independent, syndicated, network, or consortium

Note: Columns 1-4 represent the FCC's minimal reporting requirements for broadcast licensees. Columns 5-18 represent information needed for a full examination of issue-responsive programming.

COMMERCIAL TELEVISION STATIONS - PHILADELPHIA DESIGNATED MARKETS - QUARTERLY ISSUES/PROGRAM LISTS 1986-1988

	FCC Required Inf. [a]						Program Duration						Rebroadcasts (Program)						
STATION	PROGRAM DESCRIPTION 1	DESCRIPTION - LISTING TIME, DATE, LENGTH OF EACH PROGRAM 2	PROGRAM TITLE 3	TYPE OF PROGRAMMING 4		PROGRAM SCHEDULE OR INDEX 5	DURATION/ LENGTH OF PA PROGRAMS 6	NEWS SEGMENTS 7	EDITORIALS 8	DOCUMENTARIES 9	SPECIALS 10	PSAs 11	REBROADCASTS PA PROGRAMS 12	NEWS SEGMENTS 13	EDITORIALS 14	DOCUMENTARIES 15	PSAs 16	OTHER	PROGRAM SOURCE 17
KYW (3)	Y	Y	Y	Ø		N	Y	Y	Y	N/R	Y	N	Y	Y	Y	N/R	N	-	N
WPVI (6)	Y	Y	Y	Y		Y	Y	N/R	N/R	Y	Y	N	Y	N/R	N/R	Y	N	-	N
WCAU (10)	Y	Y [b]	Y	Ø		Y	N	N	N	N/R	Y	N	Y	N/R	Ø	N/R	N	-	Y
WPHL (17)	Y	Y	Y	Y		N	Y	N/R	N/R	N/R	Y	N	N/R	N/R	N/R	N/R	N	-	N
WTXF (29)	Y/N	Y/N	Y/N	Ø		N	Y/N	Y/N	N/R	N/R	N/R	N	N	N/R	N/R	N/R	N	-	Y
WGBS (57)	Y/N	N	Y/N	Ø		N	Y	N/R	N/R	N/R	N/R	N	N/R	N/R	N/R	N/R	N	-	Y

a. FCC CFR 73.3526 (a)(8). National Association of Broadcasters (Info - Pak/May-June 1988)

b. Times given are approximate rather than specific

LEGEND: Y=Yes; N=No; Y/N=Yes in part, No in part; Ø=Inconsistent Information; N/R=Not Reported

TABLE 5

The National Press and Carpal Tunnel Syndrome: A Significant Silence in Occupational Health Coverage

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The National Press and Carpal Tunnel Syndrome: A Significant Silence in Occupational Health Coverage

Katie Stilwell was 19 when she took a job rolling dough and making breadsticks at a pizzaria. She soon experienced excruciating pain in her hands, pain so awful it awakened her. "The tingling and the prickles were so bad I woke up nearly every night," she said. "I put my hands flat on my chest to try to make the pain stop then massaged my hands to try to get the feeling to come back."[1]

An orthopedic surgeon diagnosed her condition: Carpal tunnel syndrome, an inflammation of the median nerve running through the carpal tunnel in her wrists. The repetitive hand and wrist motions of rolling pizza dough during her work shift were a causative factor. For the next year and a half, Katie wore splints to bed to immobilize her wrists.

"The splints helped," she says. "But I had limited use of my hands during the day. At the pizza place, I got assigned to other chores, like sweeping up. But I couldn't hold a mop. My supervisor said I was lazy, but people don't understand. This pain is terrible."

After a succession of other jobs—assembly line, secretarial work and waitressing, where she could not carry the trays—Katie had wrist surgery. Her doctor warned that the procedure sometimes was not effective and that it might have to be repeated. "I'm young," Katie said. "I figured if I had to have the operation again in 10 years, it was still worth it to be able to use my hands again."

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[1] Interview with Katie Stilwell, Oct. 31, 1990, Bloomington, Indiana.

In late October 1990, two months after wrist surgery, Katie Stilwell's palms still bore deep purple, inch and a half long scars. "The pain is gone, and I can do just about anything now," she said. "Before I couldn't open jars or put on my pants."

The scars are a conversation starter. "People ask me about them," she says. "And I tell them about carpal tunnel syndrome. Most have never heard of it."

Nor had Katie before taking the pizza job that summer of 1987. "If I'd known about carpal tunnel syndrome then, if I'd known that too much repetitive hand motion could cause pain and nerve damage, I would have changed the way I work," she says. "All employers should be aware of it so they can give employees short rest breaks rather than losing them to carpal tunnel syndrome."

Citizens' full access to the "day's intelligence" is a requirement of press performance, according to the social responsibility theory of the press.[2] Such intelligence may well include information about occupational health issues. Carpal tunnel syndrome, "an invisible workplace hazard," strikes factory and clerical workers as well as newsroom employees and is increasingly a management issue in these industries. Carpal tunnel syndrome is the most common of the repetitive motion injuries, although reliable data on its frequency in the general work force is hard to come by.[3] In 1988, a California

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[2] Fred S. Siebert, Theodore Peterson and Wilbur Schramm, Four Theories of the Press, University of Illinois Press, 1956, p. 91.

[3] "Occupational Disease Surveillance: Carpal Tunnel Syndrome," Journal of the American Medical Association (Aug. 18, 1989), vol. 262, p. 886.

Occupational Health Program survey of 1,698 health care providers in Santa Clara County who practiced in specialty areas relevant to carpal tunnel syndrome found that these providers reported 7,214 carpal tunnel syndrome patients during 1987. Some 47 percent of these cases--3,413--may have been work-related. By comparison, in 1986 Santa Clara County reported 71 cases of work-related carpal tunnel syndrome through the California Doctors' First Program, which requires that physicians report all cases of suspected occupational injury or illness. This disparity seems to support the claim that work-related carpal tunnel syndrome cases are under-reported. [4]

The purpose of this research project was to analyze the quality of carpal tunnel syndrome coverage in the national press, which includes the five newspapers contained in the National Newspaper Index. To determine information omitted from this coverage, the scientific and U.S. government literature and articles in the specialized press and four regional newspapers were analyzed. Chris Anne Raymond's 1983 dissertation at Cornell University, Uncovering Ideology: Occupational Health in the Mainstream and Alternative Press from 1970 - 1982, provided a framework. Raymond found that the mainstream press portrays the government as an independent source of power, characterizes occupational health problems as isolated incidents and seldom gives coverage to working class issues or the views of workers. The advocacy press portrays government power as resting on corporate ties, characterizes occupational hazards as systemic problems, gives coverage to workers and working class issues and focuses on labor as the central issue.[5]

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[4] Ibid.

[5] The Alternative Press Index was searched for "carpal tunnel syndrome" and "repetitive strain injury" for the period 1980-1990. No citations were found. A

Three hypotheses were proposed:

1) That the national press ignored this workplace injury until recently, when white-collar workers--such as journalists--began experiencing debilitating wrist pain.

2) That government and industry officials and other "experts" are used as sources more often than ordinary workers and that stories from workers' perspectives are rare.

3) That the pro-worker, prevention aspects of carpal tunnel syndrome are not well covered. These preventive measures include job restructuring to include rest breaks, workplace redesign, changes in employees' posture and work habits, and tool redesign.

The Science and Health Literature

A database search yielded 16 articles on occupation-related carpal tunnel syndrome, with the earliest studies reported in the late 1970s.[6] Although researchers examined different aspects of carpal tunnel syndrome, one variable unites their work: Most found that the majority of victims are women. "Women at the onset of menopause, which suggests that hormonal changes may affect the soft tissues of the wrist..." is one finding. [7] The researchers describe carpal tunnel syndrome's early warning signals---a burning pain in the thumb and fingers that awakens the patient plus occasional numbness and tingling. [8]

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comparison between mainstream and advocacy press coverage of carpal tunnel syndrome could not be made.

[6] Methodology: Science and medical literature databases were searched back to 1970 using "carpal tunnel syndrome," "human" and "occupational" as the search terms.

[7] M.R. Berger and Avrum I. Froimson, "Hands that Hurt: Carpal Tunnel Syndrome," American Journal of Nursing, (February 1979) vol. 79, p. 265.

[8] Ibid., p. 264.

Women's hand and wrist size were also thought to be a causative factor. Noting that the illness occurs between two and ten times as frequently in women as in men, researchers studied two groups of women in sewing production jobs. Hand size did not make a difference in the incidence of carpal tunnel syndrome but forceful exertions did.[9] "Employers are advised to concentrate on job design to prevent occupational carpal tunnel syndrome...minimize frequent deviations of the wrist from the straight position, particularly during forceful exertions of the hand....tool design, work place lay out, use of wrist splints, or training" may also help prevent the problem. [10]

In a study of patients at an aircraft engine manufacturing plant researchers found that the use of vibratory hand tools and a history of gynecological surgery were strongly associated with the onset of carpal tunnel syndrome. [11] Another study noted that the wrist movements used by cashiers and hair dressers were also associated with carpal tunnel syndrome. Extreme movements of flexion or extension were observed in bakers who forcibly flex their hands while kneading dough.[12] These industrial medicine researchers, then, knew about the dangers of kneading four years before Katie Stilwell contracted carpal tunnel syndrome from pummelling pizza dough. In a plan outlining ways to control occupational repetitive trauma injuries, they conclude: "Schedule regular rest breaks. This is particularly important when employees are compensated on a piece-rate or other incentive basis." [13]

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[9] T.J Armstrong and D.B. Chaffin, "Carpal Tunnel Syndrome and Selected Personal Attributes," Journal of Occupational Medicine, (July 1979), vol. 21, no. 7, p. 481.

[10] Ibid.

[11] L.J. Cannon, Edward J. Bernacki, and Stephen D. Walter, "Personal and Occupational Factors Associated with Carpal Tunnel Syndrome," Journal of Occupational Medicine, (April 1981) vol. 23, no. 4, p. 255.

[12] R.G.Feldman, Rose Goldman, and W. Monroe Keyserling, "Peripheral Nerve Entrapment Syndromes and Ergonomic Factors," American Journal of Industrial Medicine, (1983) vol. 4, no. 5, p. 666.

Carpal tunnel syndrome appears to be especially prevalent among females in low-skilled, low-paid assembly jobs, particularly jobs that emphasize piecework. [14] Simple changes in tool and workplace redesign could do much to prevent the problem. "In the meat and poultry industry, for example, knife redesign has evidently reduced the incidence of cumulative trauma disorders....management is reluctant to spend money for new equipment without evidence of cost benefit." [15]

A state of the research review notes that carpal tunnel syndrome is best diagnosed early, when it is easily reversible. [16] Surgery is the most common relief procedure but costs to the patient (scarring of the wrist and disability for a period of time) are significant. Corporate costs may range as high as $30,000 per case. Conservative treatment such as rest breaks and job restructuring are more effective in human and fiscal terms.

In 1987 researchers found no significant difference between males and females in the incidence of carpal tunnel syndrome. [17] Nor did they find a correlation between reproductive history (including birth control pill use and hysterectomy) and symptoms of carpal tunnel syndrome. The problem was strongly associated with high force-high repetition jobs.

In early 1989 the New England Journal of Medicine reported that overuse injuries are a common problem among performing musicians;

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[13] Ibid., p. 678.

[14] Madelon Lubin Finkel, "The Effects of Repeated Mechanical Trauma in the Meat Industry," American Journal of Industrial Medicine," (1985), vol. 8, no. 4-5, p. 376.

[15] Ibid., p. 378.

[16] Linda Morse, "Repetitive Motion Musculoskeletal Problems in the Microelectronics Industry," Occupational Medicine, (January-March 1986), vol. 1 no. 1, p. 169.

[17] Ibid., p. 347.

women are more commonly affected than men.[18] Rest is essential. "For some musicians, a reduction in playing time will suffice, whereas splinting and total rest are required for others." [19] Unlike factory or office workers who often suffer for years..."professionals and conservatory students seek help after a week of symptoms or telephone on the day symptoms begin. They recognize that pain is not a normal part of making music..."[20]

The June 1989 AAOHN Journal summarizes three common aspects of carpal tunnel syndrome in the science and health literature: 1) it affects three times more women than men, with 60 percent of the clients between 40 and 60 years of age; 2) about half of the clients had had symptoms for more than two years when diagnosed; 3) the dominant hand is initially symptomatic in 70 to 90 percent of clients.[21]

These findings in the science and health literature went unreported in the national press.

United States Government Documents

A search of U.S. government literature on carpal tunnel syndrome yielded three documents.[22] A hearing that focused on the incidence of carpal tunnel syndrome among letter-sorting machine operators in the post office contains testimony about the prevention of carpal tunnel syndrome.[23] The National Institute of Occupational Safety and Health recommended: 1) redesign of hand tools to enable the user's wrist to maintain a more natural position; 2) modification of work stations to reduce the worker's need to bend the wrist; and 3) provision of more frequent rest breaks and worker rotation across jobs.

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[18] Alan H. Lockwood, "Medical Problems of Musicians," New England Journal of Medicine, (Jan. 26, 1989), vol. 320, p. 221.

[19] Ibid., p. 223.

[20] Ibid., p. 226.

[21] Robert Schenck,"Carpal Tunnel Syndrome," AAOHN Journal: The Official Journal of the American Association of Occupational Health Nurses," (June 1989), vol. 37, no. 6, p. 228.

[22] Methodology: A search was conducted from 1970 to the present using the Congressional Information Service database. "Carpal tunnel syndrome" and "repetitive strain injury" were the search terms.

A physician who had studied carpal tunnel syndrome for five years testified that one reason the problem may not have been associated previously with the work site is that the major symptoms occur in the evening. When the hands are at rest, the increased volume of fluid generated by the inflammation of the carpal canal compresses the median nerve and causes a tingling, burning sensation. Workers find it difficult to relate symptoms that occur in the evening or that awaken them with activities that happened during the day.[24] Furthermore, undiagnosed and untreated carpal tunnel syndrome can result in the wasting of muscles at the base of the thumb. The thumb becomes a totally useless digit, which makes the hand essentially useless.

A few months later, the Office of Technology Assessment issued a report on office hazards and health risks.[25] Repetitive tasks, constrained working positions, inadequate rest breaks and poorly designed workstations are factors that lead to a variety of musculoskeletal complaints, including carpal tunnel syndrome.

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[23] U.S., Congress, House, Subcommittee of the Committee on Post Office and Civil Service, Hearing, Effects of Carpal Tunnel Syndrome and Tendonitis on Postal Employees, 98th Congress, 2nd Sess., June 8, 1984.

[24] Ibid., testimony of Dr. Margrit Bleeker, Dept. of Neurology and Occupational Medicine, Johns Hopkins Medical Institution, p. 15.

[25] Robert Arndt and Larry Chapman, "Preventing Illness and Injury in the Workplace," Office of Technology Assessment, (Sept. 1984), vol. II, part C.

The incidence of such hazards among women workers was investigated. In 1981, women constituted about 43 percent of the total labor force and made up 53 percent of all office workers, with the highest proportion of them in clerical work.[26] These clerical workers share characteristics other than gender: Most receive low pay, their opportunities for advancement are minimal and few belong to labor unions.[27]

Increasing use of office technologies "may provide tools to perform work in an easier, more efficient way, but the free time that results is filled with an increased volume of work. As a result, jobs become more simplified, repetitive and unsatisfying...There is a deliberate endeavor to maximize efficiency and output and greater pressure to work quickly and accurately, often at a pace set by a machine."[28]

Such problems persist because "the economic costs of absenteeism, turnover and reduced performance that might be associated with poor working conditions have not been demonstrated to a sufficient degree to provide an incentive for change." [29]

Strategies for controlling workplace hazards include job rotation and work-rest schedules such as those proposed by the Newspaper Guild, the National Association of Working Women and a few state legislatures. These range from 10 minutes for each hour of "high visual demand" work to 20 minutes for each two hours of work at a computer terminal.[30]

In addition to the millions of clerical workers at risk, some 20 million workers on assembly lines and in other jobs requiring repetitive strain-producing motion are at increased risk for carpal tunnel syndrome. A method is needed to identify its earliest signs, to evaluate its progression, and to examine the role of predisposing risk factors. When conservative therapy (rest, wrist splints and ergonomic changes in the workplace) is employed early...the natural history of progressive symptoms with eventual median nerve impairment may be prevented. This medical surveillance could help cut costs for industry, which claims that carpal tunnel syndrome is one of its most disabling and costly medical problems.[31]

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[26] Ibid., p. 13.
[27] Ibid., p. 119.
[28] Ibid., p. 21.
[29] Ibid., p. v.
[30] Ibid., p. 50.

In 1989 another Congressional committee held hearings on repetitive motion injuries.[32] Witnesses from the Communications Workers of America, the Newspaper Guild, the United Food and Commercial Workers International Union and the United Automobile Workers testified about the increasing incidence of cumulative trauma disorders among their members. Workers in jobs requiring high repetitiveness and high forcefulness have 26 times the risk of cumulative trauma disorders as those people in low force-low repetition jobs. The way work continues to be organized probably increases repetitiveness. Forceful activity is being transferred to smaller and smaller muscle groups in the hands and fingers. These factors, combined with an aging work force, probably are contributing to the actual increase in incidence rates.[33]

Rep. Tom Lantos, subcommittee chairman, reprimanded government witnesses: "If we have a national epidemic, if half of occupational injuries will appear involving potentially millions of people, billions of dollars, why aren't you putting more resources into this field?" [34]

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[31] Ibid., p. 203.

[32] U.S., Congress, House, Subcommittee of the Committee on Government Operations, Hearing, Dramatic Rise in Repetitive Motion Injuries and OSHA's Response, 101st Congress, 1st Sess., June 6, 1989.

[33] Ibid., testimony of Dr. Barbara Silverstein, University of Michigan Center for Ergonomics and School of Public Health, p. 95.

That the Occupational Safety and Health Administration (OSHA) lacked money to develop standards to prevent work-related cumulative trauma disorders brought this Lantos rejoinder: "AIDS didn't have any budget a few years ago and now we are spending an enormous amount of money on it. If the problem is as remotely serious as all of the witnesses claim it is, then the absurdity of relegating it into such a low priority status in OSHA's scheme of things is inexcusable." [35]

The magnitude of the carpal tunnel syndrome problem plus the need to restructure jobs to prevent it were messages in these government documents that were not reported in the national press. In fact, with the exception of one article in the Los Angeles Times ("U.S. Officials Call Repetitive Motion Injuries an Epidemic," June 7, 1989), these government hearings and the report were ignored.

The Specialized Press

From 1983 to December 1990 the specialized press published 40 articles about carpal tunnel syndrome. Twenty-seven different publications accounted for these stories, yet only seven publications carried more than one article: Editor & Publisher had six; Occupational Hazards and Safety & Health each carried five; National Underwriters Property and Casualty Risk and

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[34] Ibid., p. 92.
[35] Ibid., p. 108.

Benefits Management had three; and Risk Management, Personnel Management and Columbia Journalism Review each had two.[36]

The number of articles published each year indicates an increasing focus on carpal tunnel syndrome:

Year	Number of Articles
1983	1
1985	1
1986	1
1987	8
1988	3
1989	12
1990	14

The earliest articles describe the symptoms of carpal tunnel syndrome, its probable causes and conservative treatment, although surgery is often mentioned. The articles in 1985 and 1986 drew on science and health research and noted that women were more prone to carpal tunnel syndrome than men.[37]

During 1987, most stories included rest as a treatment option. Safety & Health advises that resting the injured area is of primary importance in recovery.[38] Occupational Hazards notes that "minor cases of carpal tunnel syndrome may be cured simply with a few days of rest, but serious chronic cases are often operated on."[39] An ergonomics consultant advises: "There is a fallacy out there that if people take breaks, they're not being productive. But there is plenty of good research to show that taking frequent, short breaks improves productivity."

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[36] Methodology: The Readers Guide to Periodical Literature, the Index to Business Periodicals and INFOTRAC were searched from 1980 through 1990 using "carpal tunnel syndrome," "repetitive strain injury," and "overuse injury" as search terms.

[37] Terry Pitchford, "Carpal Tunnel Syndrome: Occupational Hazard," Dental Assistant, (April 1985), p. 15, and Bruce Sprachta, "Repetitive Motion Cumulates Trauma," Safety & Health, (February 1987), p. 36.

[38] Ibid.

[39] "Carpal tunnel syndrome: Getting a handle on hand trauma," Occupational Hazards, (February 1987), p. 46.

Editor & Publisher, commenting on the incidence of repetitive strain injury in the Los Angeles Times newsroom, quotes patients and doctors: "The best medication is rest." In fact, all those afflicted with repetitive strain injury said they take frequent short breaks, up to 10 minutes every hour.[40]

The National Public Accountant warned its readers that they should take control of their work environment to prevent repetitive strain injuries. The article enumerates ways to alleviate problems associated with computer use: improved posture, furniture to fit the accountant, and physical exercises to be done while sitting at the terminal to counteract strain put on muscles, tendons and ligaments.[41]

One article in 1987 made the connection between repetitive strain injuries among all classes of workers: "VDT use can produce stress in white-collar workers similar to what is seen in blue-collar workers when they have jobs with low control, high work-load demand, close supervision and fragmented and repetitive tasks."[42]

The relatively few articles in 1988 took a new direction, with less emphasis on symptoms, treatment and prevention and more on what employers could do to save money on worker's compensation and related costs. In the mid-1980s, between 20,000 and 25,000 cases of carpal tunnel syndrome were reported nationally and costs averaged $15,000 to $20,000 if the person returned to work.[43] Editorial attention shifted to cost control: "The role of the hand therapist is to get the employee back on the job quicker and at less cost to the employer."[44]

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[40] George Garneau, "RSI--the computer disease," Editor & Publisher, (June 6, 1987), p. 144.

[41] Sonia Stone and Andrea Lee Spinelli, "Getting Comfortable with Your Computer," The National Public Accountant, (May, 1987), p. 35.

[42] "Ergonomic problems dog VDT use," Occupational Hazards, (December, 1987), p. 41.

Some articles during 1989 heralded ergonomic designs for equipment that would reduce the incidence of carpal tunnel syndrome.[45] Others focused on the money that could be saved through ergonomic evaluations of the workplace and employee training.[46] The supermarket industry paid millions of dollars in increased worker's compensation and liability insurance fees for carpal tunnel syndrome among cashiers.[47]

Costs associated with carpal tunnel syndrome continued to be the main story in 1990. Occupational Hazards estimated repetitive strain injury costs to be $20 billion a year.[48] Editorial Research Reports noted that "in the long run, attention to ergonomic issues will save employers money by reducing compensation costs. Employees...are healthier, absenteeism is lower, and morale improves."[49]

Job-related cumulative trauma disorders more than tripled between 1983 and 1987 and the annual number of untreated or undetected cases may reach 250,000. "Some officials see the disorder as the first major post-industrial illness and consider the relationship between cumulative trauma disorders and the workplace in the '80s similar to the relationship between lung disease and smoking in the '50s, before scientists determined smoking was carcinogenic."[50]

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[43] Sharon A.Falkenburg, "Carpal Cure: All in the Wrist?" National Underwriter, (Aug. 15, 1988), p. 11.

[44] Robert R. Schenck, "Keep in touch with pain," Safety & Health, (December, 1988), p. 42.

[45] Charles Murray, "Pneumatic Stuffers Speed Auto Seat Assembly," Design News, (Feb. 13, 1989), p. 108.

[46] Stephen Minter, "Meatpackers attack safety shortcomings," Occupational Hazards, (May 1989), p. 85.

[47] William Snoddy, "U.S. may probe repeat-motion injuries," Supermarket News, (June 19, 1989), p. 37.

[48] "Ergonomic improvements undertaken," Occupational Hazards, (January, 1990).

[49] R.K. Landers and D. Brazemore, "Repetitive Motion: New Job Ailment," Editorial Research Reports, (Feb. 16, 1990), p. 100.

The most recent articles in 1990 were reports of actions within the newspaper industry. A six-month study of 800 employees at Newsday found that 40 percent reported symptoms of repetitive strain injury. Researchers found no significant difference in incidence between men and women, debunking earlier studies that said women were at greater risk. Men and women in previous studies were not performing the same jobs.[51]

Despite this finding, of the eight reporters and editors who filed a $270-million suit against Atex Inc., seven are women.[52] The plaintiffs in this federal suit allege that the firm's computers have led to an assortment of repetitive strain injuries. Two other stories about this product liability suit add another dimension to the coverage of work-related carpal tunnel syndrome in the specialized press. Few of the issues raised in these articles were reflected in the national press.

The national press

Of the five papers indexed in the National Newspaper Index, four carried stories about carpal tunnel syndrome from 1980 to 1990.[53] The

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[50] Dan Huntley, "Key Injuries Hurt Companies," HR Magazine, (June 1990), p. 72.

[51] Jim Rosenberg, "Newsday reports major study of RSI among employees," Editor & Publisher, (Feb. 10, 1990), p. 35.

[52] John Consoli, "Reporters sue over RSI," Editor & Publisher, (June 23, 1990), p. 52.

[53] Methodology: A search using "carpal tunnel syndrome," "repetitive strain injury," and "overuse injury" involved the computerized National Newspaper Index and paper

Washington Post published the most, with 13 stories; the Los Angeles Times carried seven; and the Wall Street Journal and New York Times each published five stories. These newspapers did not begin coverage until 1988. Most stories are about OSHA fines of various industries, union action to address work place problems, or the ergonomic factors involved in preventing repetitive strain injuries. Only five other national publications carried stories during this time: Business Week had two; U.S. News & World Report, Newsweek, McCall's and Reader's Digest each published one.

As with the specialized press, the number of stories increased annually.

Year	Number of Articles
1986	1 (newspaper = 0)
1987	0 (newspaper = 0)
1988	4 (newspaper = 3)
1989	14 (newspaper = 12)
1990	17 (newspaper = 15)
	36 (newspaper = 30)

Two thirds of the 30 carpal tunnel syndrome stories the national newspapers published from 1988-1990 concerned OSHA fines in particular industries, OSHA rules regarding the prevention of repetitive strain injuries, and labor union actions to seek OSHA intervention in the workplace. Two stories were statistical reports; two were related to legal actions; two were general stories on carpal tunnel syndrome and two were human interest stories, both about catfish workers in Mississippi who suffer carpal tunnel syndrome from the speed of the production line and the repetitive motions their work involves. One story was about ergonomic furniture design and one heralded a new surgical procedure that decreases a worker's time away from the job after wrist surgery from 46 days to 25. Most stories were in the

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indexes of The New York Times, Washington Post, Los Angeles Times, the Wall Street Journal and the Christian Science Monitor from 1980 through 1990.

main news section of the newspapers. In general, the greater incidence of carpal tunnel syndrome among women, which the science and health literature noted, and its painful, nocturnal symptoms, prevention and conservative treatment through rest breaks, job restructuring and tool redesign, which were hallmarks of the government literature, were not mentioned. Nor was the extent of the problem as indicated in the specialized press.

McCall's published the sole article in 1986. It covered symptoms, prevention and treatment of carpal tunnel syndrome, but highlighted Vitamin B6 therapy as a new treatment. Business Week, U.S. News & World Report and Newsweek mostly focused on the record OSHA fines levied in particular industries for ignoring conditions that foster repetitive motion injuries.

U.S. News & World Report, for example, highlighted the rash of cases in the meatpacking industry ("America's No. 1 disaster area"), the auto industry and among office workers, and notes that by the year 2000 more than half the work force could be vulnerable to carpal tunnel syndrome. "On the whole, industry has been slow to take preventive measures. Unlike exposure to toxic substances, the hazards that lead to cumulative trauma disorders are difficult to measure and can vary widely from job to job--and worker to worker. Women and older employees are particularly susceptible."[54]

The relative paucity of carpal tunnel syndrome articles in the nation's major newspapers made a search of several other newspapers imperative.[55]

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[54] Andrea Gabor, "On-the-job straining: Repetitive motion is the Information Age's hottest hazard," U.S. News & World Report, (May 21, 1990), p. 53.

[55] Methodology: The Dow Jones and VuText databases were searched for stories in four regional newspapers: The Chicago Tribune, Newsday, the Miami Herald and the Boston Globe. The time periods of the searches varied because of the differences in

The Chicago Tribune published 29 stories from June 28, 1985 until Sept. 3, 1990, almost as many as all the national newspapers combined. Initial coverage focused on the problems of musicians but broadened to include a series on problems in the meatpacking industry and stories about the repetitive motion injuries of office workers and auto workers. Most of the stories were in the Tribune's business section.

Newsday, many of whose employees experience repetitive strain injuries, published 17 stories from July 6, 1987 until Sept. 8, 1990. Newsday's coverage falls more into the pro-worker, how-to-prevent-repetitive-strain injuries category: "Investing in offices that work" (July 6, 1987), outlines 10 aspects of the office environment that most affect worker productivity and job satisfaction. Other stories indicate a pro-worker position: "Hazards creep into white-collar job sites" (May 9, 1988), and "Relieving over-worked wrists: Treatment options" (Feb. 21, 1989). In April 1989 the paper ran a series on repetitive strain injuries. Newsday's most recent story, "Avoiding the disabled list: The dangers of office work," (Sept. 8, 1990) includes a sidebar about tasks that can be restructured to avoid hand and wrist injury.

The Miami Herald published 13 stories from Sept. 30, 1983 until Nov. 5, 1990. The earliest Herald story focused on the cumulative trauma disorders women workers at a Hanes factory experience as they sew pantyhose for piece-work pay. The other stories do not have the worker focus of the Newsday pieces, but they do cover a range of topics. The latest, "Software prods user when it's break time" (Nov. 5, 1990), describes new software that prompts

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the dates that these papers were added to the databases. Wire and syndicated stories as well as those on opinion pages were omitted from analysis to yield "local origination" stories on the topic.

computer users to take periodic short breaks. The stories were in the business and news sections of the paper.

The Boston Globe ran a mere three stories from May 15, 1983 until Aug. 14, 1989. Two lengthy pieces covered the symptoms, treatment and preventive aspects of the illness. "Avoiding the pain of repetitive motion" (Aug. 14, 1989) ran in the science section and included a list of suggestions for avoiding injuries.

Analysis

If the nation is indeed in the midst of an epidemic of wrist injuries connected to work, the national press is not telling. The coverage of carpal tunnel syndrome among the papers indexed in the National Newspaper Index is almost as invisible as carpal tunnel syndrome itself. National magazines seem to have ignored the problem as well. The national press fails to describe the symptoms of carpal tunnel syndrome and the range of conservative treatment that the scientific, governmental and even the specialized press report---rest, wrist splinting, job rotation and injections of anti-inflammatory drugs. Most stories do not describe the preventive measures workers can take to protect themselves from injury. The regional papers, with the exception of Newsday, are also significantly silent on the stinging, nocturnal pains that often awaken carpal tunnel syndrome sufferers.

The first hypothesis, that the national press ignored carpal tunnel syndrome until recently, when white collar workers began experiencing debilitating wrist pain, was not supported. In the four national newspapers, OSHA fines against the meatpacking and auto industries and actions of organized labor to improve working conditions triggered the majority of stories.

The second hypothesis, that most stories use management and "experts" as sources rather than ordinary workers, was supported. OSHA officials, ergonomists, union, industry and government officials as well as medical specialists form the core of sources in these stories. Workers' voices, like that of Katie Stilwell, are missing from the coverage.

The third hypothesis, that the national press does not cover the pro-worker, prevention aspects of carpal tunnel syndrome well, was supported. Expert witnesses during the Congressional hearings and specialists writing in the science publications repeatedly make a point: People do not connect the searing pain they feel at night with the work they do during the day. If carpal tunnel syndrome is an epidemic, readers must learn its symptoms as well as how to prevent it. The press, with the exception of Newsday, is socially irresponsible in neglecting this area.

Discussion:

Several reasons may account for the paucity of national newspaper coverage of carpal tunnel syndrome. These include:

1) A lack of economic, social and political forces to push carpal tunnel syndrome prevention onto the media's agenda. A comparison of the media treatment of carpal tunnel syndrome in Australia is instructive. Repetitive strain injury has been a lead story in the Australian press off and on for the past five years. Such coverage has taken the pronouncements of doctors and of the government on the injury and communicated them to a mass audience. In Australia, repetitive strain injury is a household concept. Everyone, particularly those in the vulnerable worker groups, is very aware of the alleged causes of repetitive strain injury, its symptoms, and the fact that the government and businesses believe that it is a real disease. The American

Psychologist reports in 1988 that every state in Australia has a blue-ribbon commission to investigate the causes and possible solutions to the "repetitive strain injury epidemic."[56] In some states, special work rules restrict the number of hours people may work at computer terminals to three to five hours a day. Firms are employing professionals to design equipment and to run medical programs to counter the threat.

In the 1980s, women accounted for two thirds of the repetitive strain injury compensation cases in Australia. The proportion has increased each year. The researchers note that although carpal tunnel syndrome is known in the United States, it is rare and is infrequently mentioned in conjunction with office work or computers. Workers in Australia, facing rapid computerization of their jobs, have been able to vent their dissatisfaction with the work environment by filing work compensation claims for repetitive strain injury. " This is only possible, though, because in Australia, repetitive strain injury has been socially legitimated...First, there is historical precedent for repetitive-like conditions on the job in Australia. Second, repetitive strain injury has become a cause celebre of unions and feminist groups. Third, repetitive strain injury has received official validation by the Australian medical establishment. Fourth, the Australian press has covered the repetitive strain injury story in intense detail."[57]

The lack of stories in the U.S. national press means that much of the carpal tunnel syndrome story is not being told. What does not appear in the news media can be more important than what does: Audiences cannot react to things they do not hear about.[58]

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[56] Sara Kielser and Tom Finholt, "The Mystery of RSI," American Psychologist, (December 1988), vol. 43, no. 12, p. 1004.
[57] Ibid., p. 1011.

Furthermore, the agenda setting function of the press--the ability of the media to influence salience of events in the public mind[59]--does not seem to work unless there is organized political or social pressure around an issue. Organized labor has not united to make prevention of carpal tunnel syndrome a cause; labor unions in particular industries are negotiating improvements for their workers. The meatpackers, for example, sought special protective rules for their industry; the United Auto Workers has negotiated improved working conditions in several automobile plants. The Newspaper Guild has tried to organize around work-and-rest standards. Clerical workers in the United States are not particularly well organized; 9 to 5 provides its 13,000 members with literature about carpal tunnel syndrome prevention. These fragmented actions in particular industries have gotten media attention, but a groundswell of support for preventing carpal tunnel syndrome across industries does not exist.

2) The way journalists do their jobs has an impact on the stories they produce. Although journalists use government activity as a source of stories, they are notorious for not covering the regulatory agencies in depth.[60] By not investigating OSHA's responsibility to ensure worker safety, the national press missed stories about the lack of regulations for worker safety in regard to

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[58] James B. Lemert, Criticizing the Media: Empirical Approaches, Sage Publications, Newbury Park, CA, 1989, p. 40.

[59] Donald L. Shaw and Maxwell E. McCombs, The Emergence of American Political Issues: The Agenda-Setting Function of the Press, West Publishing Co., St. Paul, 1977, p. 5.

[60] John Gravois and Walt Potter, "How the press misses the beat: Reporting on regulatory agencies is a vast wasteland," Washington Journalism Review, (Jan./Feb. 1982), p. 30.

repetitive strain injuries and the lack of work place record-keeping to build a data base of the incidence of repetitive strain injuries across industries.

Raymond notes, however, that there is a disproportionate amount of coverage of government activities in the mainstream press. [61] The Washington Post, for example, covered carpal tunnel syndrome from the government angle in all but two of the 13 stories. Occupational health coverage cuts across many major social institutions--business, labor, government and particularly the regulatory agencies. Mainstream journalists have accepted news routines that shape their coverage of particular institutions involved in the issue. Thus, issues like carpal tunnel syndrome fall into no particular reporting beat.

Most of the stories in the national press were tied to OSHA fines and the actions of organized labor against particular industries, further suggesting that journalists are dependent on official sources. Their stories reflect official pronouncements rather than investigations of working conditions. This sort of reporting leads readers to view the world through the perceptions of existing authority. [62]

Klaidman suggests that news media are more often reactive than enterprising, a trait that leads to underreporting of important stories that lack a corporate villain or other journalistically appealing element.[63] That the audience for the national newspapers is overwhelmingly white and middle class and that journalists for these papers are also mostly white and middle class leads to reliance on establishment sources, which are predominantly white, male and middle class. Carpal tunnel syndrome affects more women than men and is manifest most predominantly in working class industries, which may account for its neglect by the national press.

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[61] Chris Anne Raymond, "Uncovering Ideology: Occupational Health in the Mainstream and Advocacy Press, 1970-1982," (unpublished Ph.D. thesis, Graduate School of Cornell University, 1983), p. 109.

[62] Stephen Lacy and David Matustik, "Dependence on Organization and Beat Sources for Story Ideas: A Case Study of Four Newspapers," Newspaper Research Journal 5 (Winter), p. 10.

[63] Stephen Klaidman, "How Well the Media Report on Health Risk," Daedalus, (Fall 1990), p. 123.

3) Finally, the complexities of occupational health issues suggest a new role for journalists. Klaidman notes that news media are bored by systemic problems and show little interest in incremental change. [64] Until there is a crisis, the media rarely report persistently and in depth on subjects like carpal tunnel syndrome. Newsday's coverage is a case in point. The newspaper recognizes the extent of carpal tunnel syndrome among its employees and has acted to systematically inform readers of ways they can protect themselves from work-related injuries.

Raymond offers a possible role for journalists: That they become collators, theoreticians and informed analyzers of increasingly complex technical issues. If an informed body politic is to be a reality, a journalism that questions, analyzes and interprets the information underlying contemporary social problems is necessary. [65] Journalists may thus help provide better public understanding of important social issues and the actions needed to address them.

If workers like Katie Stilwell are to learn about the possible dangers of their jobs to their health they will have to wait until the national press discovers carpal tunnel syndrome: Information about this aspect of the "day's intelligence" is sorely missing from their newspapers. If the example of Australia holds for the United States, the national press will not discover this occupational health problem until organized labor and women's groups make it an issue, the medical establishment publicly recognizes it as a problem and the government requires industries to improve working conditions that contribute to the problem.

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[64] Ibid., p. 124.

[65] Raymond, op. cit., p. 182.

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Environmental Movements and the Public Sphere

The Role of Alternative Media for the Creation of an Alternative Public Sphere

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Abstract:

Based on the theory of the public sphere of Habermas and the studies of social movements, this paper examines the deficiencies of mainstream media in creating room in the dominant public sphere and in creating an alternative public sphere for environmental movements. In the mainstream media, the structures of news organizations and the routines of news-making result in an environmental reporting that reinforces existing structures, but creates no platform for an alternative public discourse. Nevertheless, mainstream media serve as the major source for environmental information. Alternative media, as shown in an analysis of their criteria, allow, in their theoretical conception, a horizontal form of communication that helps to establish an alternative public sphere. In reality, however, they fail because of organizational and economic constraints. They establish routines and hierarchies as well. Thus, they offer only a limited alternative to mainstream media. Rather, they have to be seen as a contribution to fill a gap left by mainstream media. A description of the media systems of the United States and Germany points out the relevance of the existing system and differences of the establishment of alternative media. Finally, the paper describes the development and establishment of the environmental movements in the two countries with regard to the different forms of media. For further research, the importance of an integration of the concept of the public sphere and new social movement research is necessary to fully understand the interrelatedness of alternative and dominant spheres.

Environmental Movements and the Public Sphere

The Role of Alternative Media for the Creation
of an Alternative Public Sphere

Introduction

The environmental movement has become one of the most important and successful of the new social movements of the last decades (Dominick, 1988; Inglehart, 1990). The notions of environment and ecology (often used interchangeably) have been expanded and include a set of values and political implications (Bramwell, 1989; Hays, 1987). As a result, environmental movements do not only react to the deterioration and destruction of the environment, but have formed a new political ideology (see, e.g. Tokar, 1987). Cotgrove and Duff (1980) identify environmentalism as a new social paradigm that rejects the core values of the dominant society. This alternative environmental paradigm proposes a new relationship between man and nature, sustainable development instead of economic growth, and focuses on the importance of decentralized political structures and participation in small communities (for a discussion of the relations between postmaterial values and the "new environmental paradigm" see Rohrschneider, 1990; Steger et al., 1989). In contrast to Cotgrove and Duff's classification of environmentalism as a middle-class phenomenon, recent studies have claimed the same awareness in all layers of the population (Rohrschneider, 1990). Certainly, environmental movements have already reached wide public attention and appreciation. Many opinion polls in the United States and Germany have shown the priority of environmental concerns for a majority of the population. (Dierkes and Fietkau, 1988; Gallup and Newport, 1990).

The success of the environmental movement raises questions about the role of mass media in its formation process. Mass media have the function of creating a political public sphere (Krämer, 1986). Therefore, media coverage of environmental topics must have been an important factor for the awareness of these issues. On the other hand, "sources wishing to communicate in the news media must share values with journalists, including core values of the dominant culture." (Ericson, Baranek and Chan, 1989, p. 369) Based on the theory of the public sphere (Habermas, 1971), this paper examines the roles of mainstream and alternative media for the creation of a public sphere and an alternative public sphere that helped the environmental movement in its process of constitution and growth. In particular, the functions and promises of alternative media are examined, since they show substantial similarity to the principles of green politics (participation of the grassroots, on principal, openness to everyone, decentralization, limitation of hierarchical structures, rotation principle; see Capra, 1984; Tokar, 1987). Two concrete media systems (of the United States and Germany), then, are analyzed for the development of alternative media. Finally, the paper will relate the development of environmental movements in the two countries to the spheres created by mainstream and alternative media.

The Concept of the Public Sphere and Alternative Public Sphere

The theory of the public sphere of Habermas (1971) draws attention to the importance of communication for a democratic system. The public sphere provides the space for the process of public opinion formation and public debate of political matters. It is characterized by its independence from the state or the church. It is a forum where private individuals can discuss and thus influence political matters on an equal base. A rational discourse, that is helping to integrate citizens in public life, independent from the private sphere, can only be established within this public sphere.

Habermas locates the development of an independent public sphere in the late 17th century, when citizens in France, Germany, and England met in coffee-houses to discuss political matters. The prerequisite for this development, economic independence of individuals and the division of public and private life, however, led also to the decline of the public sphere. The principle of an enlightened reasoning could only be achieved by the exclusion of other political forces. With the growth of the working class in the 19th century and the development of different class interests that could not be combined, the public sphere and publicity created by the bourgeoisie excluded all those that did not have the wealth to access it. The state was called to intervene between different interests, thus becoming a major participant in formerly private interests (*e. g.* in education, or economics). Simultaneously, public functions were taken over by private corporate bodies. Also, the institutionalization of public information, namely in the form of advertising and public relations in the 20th century, led to an integration of public and private spheres. Publicity comes from above and it does not provide information to control and legitimate power, but it "helps to manipulate the public. . . . Critical publicity is replaced by manipulative publicity." (p. 213). Advertisement and public relations exemplify the uneven control over the public sphere. Manca (1989) criticizes the same development when he states that

> [g]rassroots discussion among citizens, which is a fundamental requirement for a democratic society, tends to be displaced by the mass communication situation, by discussion among columnists, public relations practitioners, and other professionals. From active contributors to the grassroots discussion on the issues, citizens become passive spectators to a debate among professional experts, journalists, and politicians. (p. 171)

A prerequisite for the functioning of the public sphere is undistorted communication. Habermas' solution is the "ideal speech situation", which is free from ideology because its context is free from coercion and conditions of domination. Furthermore, it implies the possession of full information and knowledge. This concept has been criticized for neglecting the unequal distribution of full information, the role of expert knowledge, and the concept of political mediation by organizations (Garnham, 1986).

But it helped to overcome the determinism of Marxist approaches which argue that within the dominant (communication) system, no development of a consciousness of the individual situation is possible (for a recent discussion of ideology and consciousness, see Mumby, 1989).

Negt and Kluge (1972) rely strongly on Habermas' theory in their study of bourgeois and proletarian public sphere. They point out the importance of an alternative proletarian sphere to discuss and develop the experiences and knowledge of the working class. Only by creating a counterculture, can the working class develop its own class consciousness and avoid adoption of a "false public sphere" (p. 143) created by the ruling class. Negt and Kluge as well as Habermas in his *Theory of Communicative Action* explain the ambivalent functions of mass media for the creation of the public sphere. "*Media public spheres hierarchize* and *extend* the horizon of possible communication at the same time. One aspect can not be divided from the other - and that is the reason for their *ambivalent potential.*" (Habermas 1981, p. 573; my translation). He argues for both the authoritarian and emancipatory potentials of mass media.

Downing (1988) sees the creation of an alternative public sphere in the creation of alternative media. Their functions, according to Downing, are the "struggle to overcome political atomization in its numerous forms and to create an autonomous sphere in which experiences, critiques and alternatives could be freely developed." (p. 168) He notes the importance of this alternative public realm for "various alternative movements" in that it offers a "realistic chance of visualizing or constructing credible alternatives." (p. 169). Cohen (1985) stresses the importance of such "communicative interaction" for new social movements to "establish their interpersonal relations and coordinate their action, through negotiating definitions of the situation (norms) and coming to an agreement." (p. 707) Although he does not explicitly refer to (alternative) media, it seems clear that only by the creation of their own means of communication can these movements establish a public sphere that allows a public discourse of their interests.

However, it is not clear how the public sphere and alternative public sphere interact. Even though Negt and Kluge argue that the counter public sphere could become the public sphere through rational discourse once it has grown, there is yet little evidence or analysis on the relation between the alternative sphere created by ecological movements and the broader society. Approaches that draw a direct relationship between numbers of magazines or environmental stories and the success or establishment of the environmental movement (Schoenfeld, 1983; Strodthoff, Hawkins and Schoenfeld, 1985) do not provide explanations for the delicate relationship between new political movements and its influence on established public discussions. In particular, the relationship of different alternative realms among each other and the "dominant" public sphere has not been clarified yet. Networking theory, as outlined by Schorsch (1987), is helpful here. Schorsch argues that new social movements create their own "communicative niches." The connection and relatedness of the different movements leads to coherent communicative structures. The emancipatory impulse of the single movements expands through the multiplication of this system of single niches. Information letters, periodicals, and magazines are the main informational connections between the single networks. Additional information channels include mass media, telephone-chains, and electronic media. "The major part of information, however, still consists of direct and indirect . . . group-communication." (p. 146) This perspective facilitates understanding the interrelatedness of different alternative public spheres among each other and with the dominant public sphere. Social movement theory has drawn attention to the different forms of communication channels which are used to mobilize people, according to the stage of a movement, its purpose, and the target audiences (Klandermans, 1988).

> The development of countercultural identities most often remains a partial one, given that most people are usually integrated into multiple networks and have quite contradictory experiences in their everyday life. Because there are different degrees of integration into countercultural networks, the counterculture is not isolated from the dominant culture; the two interpenetrate, and one shades off into the other. (Kriesi, 1988, p. 43)

Since the role of communication and mass media is crucial for the theory of alternative public sphere, it is necessary to take a closer look at the different functions of mainstream and alternative media. The discussion of environmental reporting provides a case study of the ambivalent role of mainstream media for the creation of a public sphere for environmental movements.

Environmental Reporting

In 1988, *Time* decided to name the Earth its "Planet of the Year." In 1990, the *Seattle Times* won the Pulitzer Prize for national reporting for its coverage of the Exxon Valdez oil spill. These events are just two of the many indicators that show the growing importance of the environmental issue of the media in the 1980s and 1990s. In 1983, Friedman stated that environmental reporting was the "problem child of the media." In 1990, she listed a number of new publications, programs and initiatives for environmental reporting that have been created in the last few years. The increasing numbers of environmental journalists and special sections and programs for environment seem to indicate that environmental or ecological concern has been transformed from a countercultural phenomenon to an established and well-recognized issue. An evaluation of environmental reporting draws a different picture: the content and way of reporting have not changed within the last two decades. For example, in their analysis of the Santa Barbara Oil Spill, Molotch and Lester (1975) have criticized the much greater attention which was given to government and business sources. Although official representatives did not provide information, they were - particularly by national newspapers - more often covered than local initiatives. Furthermore, reporting concentrated on the dramatic events and ignored long-term political and economic consequences. Similarly, Friedman (1990) attacks the focus of the media on the dramatic events of the Exxon-Valdez catastrophe in 1989, "while important, long-range problems like agricultural run-off, over-fishing, pesticide use and the solid waste explosion were neglected." (p. 20)

Tuchman's (1978) study of the sociology of news-making reflects the mechanisms of news production (professionalism, seeking for balance, reliance on institutionalized sources, "newsbeat") that either prevent long-term issues with complex relations to be regarded at all or puts them into the conventional frame of news narrative. The dynamics that take place to subordinate political movements to media rules, once they get coverage, have been described by Gitlin (1980).

Ericson, Baranek and Chan (1989) have provided a thorough theoretical analysis of news organizations and the restraints they place on initiatives to get access to news. They point out the convergence of media organizations and the elitist culture of government and business organizations. Because of the ideological differences between citizen organizations and journalists, citizen groups are only given coverage in deviant contexts and formats, such as a dramatic public demonstration. Thus, it is not environmental movements that gain access to news media to promote their concerns, but media institutions that absorb environmental events or concerns and remodel them to fit into their scheme of reporting. "Citizens prominent in political movements . . . face the same fate in the public sphere as politicians and their party operatives. They are obliged to speak to the consensus in turn, and at a good clip. As such, they are readily absorbed in the market of commercial culture." (Ericson, Baranek and Chan, 1989, p. 305) For these reasons, news serve as legitimation for established political forces and not as "point of departure for action" in political life

(Jensen, 1990, p. 72; see also Rubin, 1988).

The heavy reliance on government resources has been demonstrated in a recent content analysis by Sandman et al. (1987, p. 11). Of all articles they examined about environmental risk, 56% contained government sources, 36% local government sources and 40% cited a spokesperson of the industry. The total coverage of advocacy and citizen groups (including scientists) equaled the coverage of industry spokespersons. These findings match Wilkins' (1989, p. 33) findings that "media reports portray the individual as powerless and institutions as change agents capable of acting for the collective good." He concludes that "such a view does not build community. It hinders development of community by substituting a myth structure for discussion of issues that, at least in theory, are within the purview of a democracy and of collective decision making." Lowe and Morrison's (1984, p. 79) contrary opinion that "the very placement of the debate before the public has its own subversive element by presenting the possibility of an alternative ideological perspective . . ." has to be regarded as a too optimistic view of the emancipatory potential of media. Rather, the mythologization of environmental topics, for instance the news coverage of the nuclear accident at Chernobyl, places them beyond the control of ordinary individuals (Luke, 1987).

If the coverage of the environment is not simply measured in quantitative entities (numbers of articles or programs devoted to nature), but also in qualitative terms, the increase of environmental coverage is relatively poor. Rubin and Sachsman have analyzed that problem as early as 1973. In their results, they show the rapid growth of environmental reporting in mass media. But they also give attention to the production of news, pseudo-events that do not provide the public with the information that they need to participate in decision-making. Schoenfeld, Meier and Griffin (1979) have postulated "five positive characteristics" with respect to the environment that can be used to analyze environmental reporting: "a solid core of ecological content; a recognition of worldwide problems of crisis proportions; a component of conscience, of a person's value system; a commitment to private and public action; and a comprehensive rather than a compartmentalized approach to change in people-land relations." (p. 39) Using these characteristics, they concluded an "absence of the press in the *early* stages of environmental claim-making." (p. 40) The established press only reacted to an issue after it had been spread by alternative forms of communication, *i.e.* books, journal articles, speeches, citizen movements, congressional acts, etc. (see also Krämer, 1986). Once put on the agenda of news sources, severe deficits in coverage of the environment have become evident. Media programs are event-oriented, related to persons rather than topics, unsystematical and punctual. They lack continuous information and a global and integrative view of problems. (Krämer, 1986, p. 202) A more political definition of "environment" reveals the gap between the notions "non-partisan" and "visually attractive" that Lowe and Morrison (1984, p. 80) attribute to environmental news, and the claims of many environmental activists or journalists to show far-reaching, social, political and economical connections of environmental matters. Television, which still serves as the most important source for environmental news, focuses on dramatic events (Greenberg et al., 1989) rather than on explanations and analysis of connections and interrelations.

In sum, environmental reporting has improved in terms of quantity, but not in terms of quality. The routine of news-making imposes a certain structure on reports. It does not help to create an alternative public sphere, because it reinforces existing structures and hierarchies.

Despite all deficiencies, mainstream media continue to be the most important sources for environmental news for the majority of people (TV for 73% of the Americans, newspapers for 62%, magazines for 37%, friends for 21% and other sources for 12% (Greenberg et al., 1989, p. 267)). International and national organizations like Greenpeace have developed their strategies according to the requirements of mass media to gain attraction and support from a wide public. Their advertising and marketing strategies are highly professionalized and expensive. But to perform successfully in this field, Greenpeace has given up its political and ideological background, watching carefully only to present a moral and economic message. "Greenpeace is not after raising consciousness or changing values, it is after changing policies and stopping immediate sources of pollution." (Eyerman and Jamison, 1989, p. 105) Organizational structures and media strategies like the ones of Greenpeace do have an important function in directing attention to certain issues. They do not, however, create a public sphere for discussion and participation, as mainstream media in general fail to provide. Gottlieb (1990, p. 46) witnesses "two interpretations of environmentalism: a media-framed, technically oriented, behavior-defined set of global issues and individual activities; and a less visible, more contentious grouping of rooted movements, networks and actions." He goes on to argue that "policy-makers, the media and even industry antagonists have granted semi-official status to the professional environmental groups, . . . this primary interpretation of environmentalism has largely ignored the growing, more populist undercurrent of the movement."

The two tendencies he outlines mark of course only the extremes of a development. In between, different forms of action, organization and policy also contribute to the environmental movement. The interaction between these groups and environmental coverage in mainstream and alternative media are mutually dependent and not exclusive. The strength of mainstream media is the creation of awareness for a large audience, often a starting point for further activity and involvement. At this point, however, mainstream media do not provide access to different opinions and alternative views, and thus fail to provide a public forum. Alternative media serve to close this gap. They provide information which is often suppressed by mainstream media, and a framework that differs substantially from the dominant ideology.

Alternative Media

To what extent can alternative media serve to create a counter public sphere, and what makes them different from mainstream media? Certainly, alternative media have played a major role in the development and establishment of new (political) movements (Armstrong, 1981; Daum, 1981; Kessler, 1984). However, the principles of alternative media, as well be shown, also put some restrictions on this purpose.

A general definition of "alternative" has not been established. First, the definition of "alternative" is closely linked to what is regarded as "established" or "mainstream". Second, a variety of media claim to be alternative, although they vary sharply in purpose and content (for examples see Minority Press Group, 1980). Finally, the term "alternative" has often been claimed by left-wing publications. Downing (1984, p. 17) argues that the theory and practice of alternative media derive to a great extent from anarchism because it emphasizes different forms of oppression beyond economics, criticizes Marxism for its neglect of party constraints, gives priority to movements rather than institutions, and attempts to construct a liberating process. On the contrary, Tomaselli and Louw (1989) define, in their examination of the press of South Africa, the social-democratic and communist press as "alternative". The principles they apply to a media network, however, are similar to Downing's categories for "alternative":

> . . . (a) create and maintain grassroots participatory democracy; (b) militate against totalitarian-centralism; (c) provide structures small and accessible enough to allow mass democratic (two-way) participation; (d) provide a learning experience that teaches useful technical and social skills as well as respect for democracy itself; and (e) encourage an engagement with ideology . . . . (p. 214)

Instead of an abstract definition, it seems more appropriate to make a compilation of requirements and characteristics of alternative media to define them on a more general level. (Since the press has been the most common of alternative media, most theoretical studies about alternative media have focused on it. Thus, most of the principles of alternative media refer to print media.)

Eurich (1980) has compiled one of the most comprehensive lists of characteristics of alternative communication in his study of alternative forms of communication in Germany. For the United States , Bushoff (1983) has gathered nearly the same features in his examination of the underground press. In general, distinctions to mainstream media can be organized in two broad categories, formal and content criteria (see table). The "new journalism"-debate in the United States has drawn attention to other criteria, such as genre or writing style, that distinguish mainstream journalism from "new"journalism (Braman, 1985). For the purposes of this paper, the focus in the discussion of alternative media lies on formal (organizational) criteria, which are of lesser importance for "new journalism" (see Flippen, 1974).

MAINSTREAM AND ALTERNATIVE COMMUNICATION

	mainstream media	alternative media
I) Formal criteria		
Production	division of labour, individual specialization and responsibility, professional	collective production and responsibility, rotating system semi-professional
Financing	profit oriented, advertising	principle of cost, only restricted advertising, donations
Distribution	subscription, regular and retailer	direct distribution (street hawkers), depending upon situation
Producers	professional journalists, distinction sender-receiver	non-professional journalists, grassroot-affiliation of journalists, attempt to overcome the distinction between sender-receiver
Target Group	general public	specific public, minorities,

		marginal groups
Means of Presentation		
- topic-division	traditional	division only to a small extent, focus on certain topics
- language	elaborate (high) language	colloquial
- layout	extensive, commercial-oriented	low-cost, experimental, simple
Access	restricted	open
II) Content Criteria		
Aim and Purpose	profit, vertical communication orientation, information, opinion formation, actuality, entertainment	creation of local public sphere, horizontal communication orientation, reduce information deficits, make connections, show alternatives, initiate actions, make policies, create contacts
Feedback/Influence and Control of Reader	only partly (alibi), indirect	direct, forum of discussion, participation in the production process
Content	actuality-oriented, sensational, establishment, personalization, legitimation	problem-oriented, articulation of interests and needs, critique, alternatives
Sources	institutionalized, official	diverse, unofficial, affected parties

(Adapted from Eurich, 1980, pp. 252-253, Bushoff, 1983, pp. 313-318)

Theoretically, alternative media could fulfill the requirements to serve as the public sphere which Habermas proposes. By providing equal access to everyone and being open for every topic, they constitute a forum for political reasoning.

The reality of media routine has proven the impossibility of carrying into action all those demands. None of the successful alternative media that have survived over a longer period have followed all these requirements (see Downing, 1984 for examples). Restrictions are inherent in such organizational systems. Besides permanent financial problems that often result in uncontinuous or low-quality work, the dependence on volunteers to uphold the production and distribution leads to informal hierarchies on the one hand, and to inefficiencies on the other hand. Decentralization and democratic structures without hierarchical organizations only function on a small-scale or local level. But, "any organization will *tend* to develop a hierarchy, whether of an overt or covert nature." (Minority Press Group, 1980, p. 21)

On a larger scale, alternative media lack both theoretical and practical conceptions that distinguish them from mainstream media, particularly in forms of interior organization. (Critical examinations of routines and restraints in the production of alternative media are rare. Eliasoph's (1988) examination of the performance of *KPFA*, an alternative radio station in California gives a detailed picture of the mechanism of daily alternative news production. Papadakis (1984, pp. 55-56) describes some of the problems of the *taz*, the West-German alternative daily.) The neglect of basic economic principles and organizational requirements in the conception of alternative media has been criticized from both a theoretical (Smythe, 1977) and organizational (Landry, 1985) perspective.

Furthermore, the openness to all topics and people can lead to an "alternative lobbyism" (Wintzingerode, 1985, p. 80), where any critical regard for alternative media gets lost. Also, "[l]ots of partizipation by different people can mean the production of incoherent or inconsistent articles on a mish-mash of subjects with no clear, overall policy as to where the paper is going." (Minority Press Group, 1980, p. 19) Basic democratic structures in decision-making processes lead to time-consuming conferences, and they can only function if the people who are involved share the same basic attitudes.

Despite these serious accusations, alternative media have operated successfully in the last 30 years (Armstrong, 1981; Barbrook, 1985; Downing, 1984; Kellner, 1985; Minority Press Group, 1980). They are only a part of a more comprehensive communication system, and their ability to create an alternative public sphere has to be judged within their place in a broader network. Personal contacts, telephone chains, public meetings, distribution of pamphlets, citizen initiatives, cafes, bookstores, communication centers, and other media all contribute to an alternative public sphere. Recently, computer networks and electronic bulletin boards have created a new forum of alternative communication networks (Downing, 1989). Certainly, one of the major abilities of alternative media is the motivation they can generate (Wintzingerode, 1985, p. 72). By showing alternatives to the status quo, they accuse, and by providing contact addresses and information that is often not available elsewhere, they induce their readers/listeners to participate actively in societal and political processes (Eurich, 1980). Local or regional communication units are better suited for these abilities. In sum, alternative media do provide a platform for alternative communication. But they do so on only a restricted level, with boundaries set by their own requirements. Rather than offering a valid alternative to the mainstream media, they fill out the gaps left over by them.

The relationship between alternative media and the ecological movement is twofold. On the one hand, ecological and environmental media are part of a broader range of alternative media. On the other hand, all alternative media can be regarded as forms of communication that fulfill the requirements of ecological thinking. Tehranian (1990 a, b) refers to this broader sense of ecology when he combines principles of alternative media and ecological politics to develop a "communitarian-democratic model of society." He sees the promise of new politics in the development of "counterculture movements" that are particularly concerned about "community, ecology, peace, and dialogical communication." (p. 240-241) Taken in this broad sense, Tehranian's concept still remains utopian, and alternative media have not succeeded in establishing a counter public sphere that could replace the existing "mainstream" realm. On a smaller scale, alternative media have succeeded in combining different countercultural groups, creating a loose network of information, and in introducing new contents to mainstream media.

> [T]he daily press does not seem initially to have operated as effectively as did other modes of communication in this society - interpersonal, conversations, newsletters, the proceedings of scientific associations, the publication of journal articles and books - to provide early environmental chain-makers a platform and help define the core concepts of the emerging social problem. (Schoenfeld, Meier and Griffin, 1979, p. 49)

The limitations of alternative media are summed up in the expression of "preaching to the converted" (Ericson, Baranek and Chan, 1989, p. 317). They organize already interested people rather than mobilizing general public support. Consequently, a further analysis of alternative media has to give regard to the societal background of their readers, and the media system of the country were they were established. A description of the environmental movements in the United States and West Germany that focuses on the role of alternative media has to include a short description of the two different media systems in which the alternative media developed.

The Media System in the United States and West Germany

In the United States, the media system is dominated by commercial television. The three national networks, ABC, CBS, and NBC, dominate the television market and programs, in particular at prime time. Although the "network-monopoly" is declining, in the evening news shows of the networks "there is about 50 percent duplication of major stories . . . " (Lichty, 1989, p. 209). The high degree of commercialization has led to a demand for mainstream reporting, leaving little place for unconventional demands. Radical actions that attract media attention have become an important part in the strategies of environmental movements. With the introduction of cable-television in the early 1970s, opporunities for public access to local television channels provided a platform for alternative communication (Kellner, 1985). Community radio and television are certainly an important contribution for alternative media, but they barly survive under the competitive broadcasting system. The high degree of commercialization and syndicalization is growing with the wide acceptance of cable-television. The Public Broadcasting System, originally created to provide access for those groups and layers of the population which are neglected by the commercial media, has failed to serve this purpose (Shorenstein and Veraldy, 1989; Wicklein, 1987).

The press is characterized by a rapidly growing concentration of ownership (see Bagdikian, 1990). A few large newspaper chains own and control the majority of press publications. The variety of competing newspapers is also decreasing (98% of all American cities have only one daily newspaper) (Graber, 1989, p. 47). Another trend in the newspaper industry is the growing importance of local news, and special "zoned editions" of big city newspapers (Bogart, 1989). This trend favors local citizen's initiatives and environmental groups, while other mainstream media are very unlikely to cover them in an appropriate way. In general, the highly commercialized structure of the American media system provides little space for political debate or thinking that does not fit into the schedule of professionalized news-production. Interestingly, Americans have much more confidence in their media institutions than do West German citizens. Sixty-nine percent have "a great deal or some confidence" in their media system, compared to only 41% of the West Germans (Parisot, 1988, p. 18).

In contrast to the United States, West Germany relied until the early 1980s exclusively on a "public service" broadcasting system, "which is highly regulated but supposedly free from undue state interference." (Humpreys, 1990, pp. 68-69) Two stations, the ARD and the ZDF, provide regional and national coverage of radio and television (see Humphreys, 1990; Sandford, 1976). Both stations are non-profit and self-administered corporations. They are organized in a form that combines the corporate system (socially significant groups exert control) and the "Proporz"-system (members of the advisory board are elected according to the amount of seats parties have in the parliament). Since advertising counts for only 20-40% of the revenues, commercial interests have less influence on programming in West Germany than in the United States. Although political influence is exerted by the members of the advisory board, journalist's activism in the late 1960s and 1970s, which was a part of the wider "liberating spirit of 1968", has secured a certain amount of inner press freedom (Humphreys, 1990, p. 187). In contrast to the United States, community radio and television have never played an important role for alternative or environmental movements. This is in large part due to the fact that German public television guaranteed a certain level of news coverage, and that the press provided a good forum for them. The most important weekly magazines are liberal and left-oriented, and therefore are sympathetic to environmentalists. In addition, the Berlin *taz* serves as a nationwide forum for alternative groups. Concentration processes occur on the regional level, where newspaper groups often hold an information monopoly. This development is of particular importance because regional newspapers are the main sources of information for West German citizens. In general, the increase of alternative publications in the 1970s has created more awareness for the development of the diverse political groups. These publications are much more integrated into the existing media system than alternative media in the United States. Certainly, the relatively higher degree of openness in the West German media system has provided a situation that is more favorable for the environmental movement than the media system in the United States.

The Development of Environmental Movements in the United States and West Germany

The role of media for environmental movements can be understood by looking at developments of these movements, the connections to other new social movements, and the forms of communication they have developed. Comparisons between the

United States and West Germany are of special interest, since their environmental movements have influenced each other' s actions and ideas (Capra, 1984), though they were established in completely different ways. Due to the different political systems, a Green Party has been established in West Germany, while in the United States, the political action of environmentalists concentrates on lobbyism (see Clayton, 1990). Rabe (1988) talks about a unitary and an adversarial democracy which demands different approaches for environmental groups.

In the United States, large national conservation societies were formed at the beginning of this century (Hays, 1987; Petulla, 1987). Their concern for the environment has focused on the preservation and conservation of nature for recreational and esthetic values (Rosenbaum, 1985). Many place the birth of modern environmentalism, with a broader sense of environment that includes political and social aspects, in 1962, when Rachel Carson published *Silent Spring*, her influential and widely-read study about the use of pesticides (Lutts, 1985; Paehlke, 1988). Another event which is often cited as the beginning of a broad environmental consciousness is the celebration of the first Earth Day in 1970 (Gottlieb, 1990; Hays, 1987). The roots for political environmentalism (for a definition, see Cotgrove and Duff, 1980), however, cannot be found in large-scale and highly symbolic events, but rather in the protest movements of the 1950s and 1960s. According to Dominick (1988, pp. 6-7), four noteworthy movements contributed to the green movement: the civil rights movement, with the development of non-violent tactics and direct action, and the demand for social justice; the student movement, in particular *Students for a Democratic Society* (SDS), with its advocacy of nuclear disarmament and demand for participatory democracy ; the alternative lifestyle movement, with the rejection of materialistic values; and the feminist movement, with the questioning of general principles of a male dominated society. Besides the traditional conservation societies, a variety of other groups emerged to advocate environmental concerns: law groups, which are mainly concerned with litigation; public interest groups, which conduct their own research on health and consumer concerns; activist groups; national groups which focus on lobbying; and citizen's initiatives (McCormick,1989; Petulla, 1987). The differences between highly organized national groups with offices in Washington, D.C., and small, issue oriented citizen's groups is considerable. However, most of the locally organized groups cooperate with the local bureaus of the big organizations (Hays, 1987), using their information and skills. In return, national organizations have a broad base for lobbyism (Fowler and Shaiko, 1987). In the words of Rosenbaum (1985, p. 64), "interest groups form a political communications network through which issues are translated into terms of relevance to concerned citizens and by which individuals can be mobilized for political action in environmental issues."

Although the range of political attitudes varies strongly among the different groups (Borelli, 1987, Paehlke, 1988; Russell, 1987; Turner, 1988), they are aware of the importance of different forms of actions and organizations to attract a broad range of people. Also, cooperation with other social movements is growing (see, *e.g.*, Zisk, 1990). Walsh (1988) describes the complex forms of communication that citizen's movements have developed after the nuclear accident of Three Mile Island. They used the information and knowledge of national nuclear groups, but refused to become integrated with these larger organizations. For the internal mobilization and organization, the movements used a variety of alternative forms of communication, including radio, local newspapers, posters, and telephone chains, to advertise numerous hearings and meetings, and to circulate summaries of events. A key variable for participation in further action was attendance at public meetings, hearings, or rallies. Ninety-five percent of those who eventually became activists reported attending one of these public functions. These results show drastically the importance of other forms of communication for active participation in political matters. Similar observations are made by Krimsky and Plough (1988), who examined the forms of communication networks in different cases of environmental risk. Concerned citizens formed their own grassroots organization and established an extensive network of communication in a letter-writing campaign used to gain recognition and support from the local and national press, elected officials, and environmental groups. The analysis of Krimsky and Plough shows, on one side, the importance of communication among concerned citizens to define their perception and concern of the risk, and, on the other side, the importance of (local) mass media to attract a broader audience. The double-strategy of many environmental groups - to provide a forum for discussion and political reasoning for its members, while at the same time using established forms of communication (mass media and public relations) for a larger public - remains a contradiction to the principle of participatory democratic structures. Face-to-face communication in connection with media campaigns remains the most important form of communication for grassroot-movements (Boyte, Booth and Max, 1986). On a national level, well-established environmental publications like *Mother Earth News* have a wide circulation, and form together with regional environmental media and left-oriented alternative media, like *The Guardian*, a network of information that is open for a thorough discussion of environmental issues (Armstrong, 1981).

The environmental movement in West Germany is more closely organized since it has one national platform, the Greens. The recruitment of members has, similar to the United States, strongly relied on the political movements of the 1960s. Although ecological concerns have a long and important tradition in West Germany (Bramwell, 1989), conservation societies do not play such an important role as in the United States (Brand, 1986; Leonhard, 1986). The *Außerparlamentarische Opposition* (APO, Extra Parliamentary Opposition), which substantially consisted of the disarmament movement, leftist intellectuals, and anti-authoritarian students, was an important forerunner for the Greens (Burns and Will, 1988). Also, the anti-nuclear and peace movements were integrated into the Green party. The strong connections between the different movements resulted in the concentration on nuclear power in the early stages of green politics. Besides the more programmatic movements, citizen's initiatives have played a crucial role for the Greens. The importance of the citizen's initiatives for the environmental movement goes so far that Brand, Büsser and Rucht (1986, p. 86) see the "ecology-movement as [a] qualitatively new step of the citizen's grass-roots movement." The close relation of the different streams of the environmental movement has been fostered by the combined protests against three nuclear power-plant sites in the 1970s (see Wessolleck, 1985). During this same period, environmentally oriented citizen's initiatives merged into a national clearinghouse, the Bundesverband Bürgerinitiativen Umweltschutz (BBU, Federal League of Citizen Initiatives on Environmental Protection) (Burns and Will, 1988; Dominick, 1988; Wessolleck, 1985). The alternative movement contributed to the environmental movement in West Germany as it did in the United States. It created hundreds of small alternative projects, that rejected the dominant way of life (Papadakis, 1984). Also, the publication of books that criticized the dominant economic paradigm had a similar important impact in West Germany as in the United States. The Club of Rome's *Limits of Growth* (1972), Herbert Gruhl's *Ein Planet wird geplündert* (A Planet is Plundered, 1975), and others have had an important influence for the formulation of an ecological critique (Burns and Will, 1988; Dominick, 1988).

The establishment of the Green Party in 1980 provided an umbrella organization for environmental groups. Since the question of political participation and grassroots democracy has been an important issue in the citizen's action movement (Guggenberger, 1980) and the student's protest, the Greens saw themselves as extension of the extra-parliamentary protest movement. (Papadakis, 1983) As early as in the late 1960s, the APO (Extraparliamentary Opposition) had campaigned against the dominance of the right-wing boulevard press and promoted free information and free speech (Burns and Will, 1988). Thus, the Greens focused their information policy on "organizational transparency" (Burns and Will, 1988, p. 245) which lead to the requirement of frequent publications from the parliamentary and city councils. The openness of the Greens to different movements, the stress on grassroots democracy and decentralized structure, and the importance they attribute to information, challenge the policies of established parties (Müller-Rommel, 1989; Rüdig, 1988). Like the aims of alternative media, which show a striking resemblance to these demands, theory and reality differ substantially (Kitschelt, 1988). However, the substantial amount of publications they produce offers an important platform for environmental groups. From the weekly newspaper *Die Grünen* (The Greens), and the monthly broadsheet *Grüner Basis Dienst* (Green Grassroots Service) to the monthly newspapers and journals produced by regional associates, and magazines, pamphlets and bulletins published at the local level, their publications are produced by volunteers and controlled to a great extent by the grassroots (Burns and Will, 1988; Capra, 1984; Downing, 1988). Furthermore, the foundation of the Berlin *taz*, an alternative, nationwide, daily newspaper opened a platform for environmentalists and other political movements that were often ignored in the established press. In 1980, for instance, the *taz* provided contact addresses for activists who went to Gorleben to occupy the area designated for a nuclear power-plant (Papadakis, 1984). The greatest success for environmental groups, however, has been on the local level with direct citizen action and favorable media coverage (Papadakis, 1984).

Conclusion

This paper examined the role of mass media and other forms of communication for the development and constitution of environmental movements. In particular, the different functions of mainstream media and alternative media were compared. Habermas' (1971) theory of the public sphere, where he focuses on the importance of communication for democratic societies, provided the framework for the evaluation of the media. Furthermore, Downing' s (1988) notion of an alternative public realm - the realm where new political thoughts can be developed and discussed without the influence of the dominant ideology - was discussed in regard to environmental movements. The discussion has shown that the concept of an alternative public sphere still needs to be refined. In particular, the relationship between the dominant public sphere and the alternative public sphere has not yet been clarified. The concept of the public sphere has to be combined with theories of "new social movements", to be able to explain the interrelatedness of alternative and dominant public sphere. A simple dichotomy is not sufficient to describe the various levels of information and action that are interplaying.

Similarly, the relationship between mainstream media and alternative media needs further research. It has been shown that environmental reporting cannot create a forum for discussion that would help to create an alternative public sphere because it follows the traditional patterns of news making. Mainstream media are, however, the major information sources about environmental issues and thus helped to shape the awareness of the topic. Theoretically, alternative media provide a platform where new political issues can be discussed. The concept of alternative media has,however, several weaknesses, and in reality, they fail, because hierarchical and organizational structures develop. Alternative media cannot replace mainstream media, they can only fill gaps left by them. Nevertheless, alternative media play an important role in the development process of the environmental movement. In connection with other forms of communication, such as pamphlets and telephone chains, they create an information and communication network among its members that leads to more political activity and participation. A comparison of the environmental movements in the United States and West Germany has pointed out the importance of alternative media for their internal organization. The different media systems have formed different preconditions for the development of the environmental movements and the creation of alternative media. Because of media that were traditionally more open to new societal movements, and allowed more critique of the existing system, the environmental movement in Germany was more integrated into existing structures. Furthermore, the establishment of a more formalized structure that tried to incorporate diverse forms of alternative movements was facilitated by established alternative printmedia. In contrary, the environmental movement of the United States has developed a more diversified structure with a looser cooperation. The gap between alternative and mainstream media is larger, and has led to more polarized strategies in the use of the different forms of media.

The problems addressed in this paper have revealed the importance for further research in the field of political communication. The success of many new social movements and citizen's initiatives is a clear sign that political communication does not only take place in presidential campaigns and on television news. The relationship between mainstream media, alternative media, and other forms of communication for the formation of political activism needs a more thorough examination. The comparison of different media systems has to be included in such research. Furthermore, theories of new social movements, and the role media play in the different stages of their development, should be combined with communication theories to gain further insight (for an example, see Raboy, 1984) in the process of opinion making and political participation.

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Predicting Interest in Science and Quasi-Science Newspaper Stories

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Running Head:Predicting Interest

Abstract

Scientists and others often express concern about the effect of mass media stories about the paranormal, the occult, and other questionable science. Indeed, belief in many of these topics is widespread among the public and even fairly common among scientists. However, little research has looked into why the public is interested in quasi-science stories and how the public might be affected by such stories. The current study found that, although real-science and quasi-science stories seemed to appeal to somewhat different groups, the variables that predicted interest were remarkably similar for both types of stories. Based on headlines, respondents said they would be interested in reading stories of both types that were perceived to be relevant, entertaining, familiar and informative. The perceived difficulty of the story was not a factor. These factors predicted more than half the variance in interest for both types of stories. This supports a relevance/arousal picture of interest in science stories. What respondents meant by the relevance of a quasi-science story was unclear; since, the link between perceived interest in a quasi-science story and perceived relevance of a quasi-science story was not mediated by the perceived reality of that story. The results also suggest that enhancing the entertainment value of real-science stories may increase reader interest.

Predicting Interest in Science and Quasi-Science Newspaper Stories

The public is often exposed to stories dealing with what we will call "quasi-science." Such stories concern topics traditionally associated with the paranormal or the occult (ESP, astrology) and stories scientists with relevant specialized knowledge are likely to consider unlikely and unproven (UFOs and cross species organ transplants, for example). The mass media do not always express skepticism about these stories or make a clear distinction between science and quasi-science (Klare, 1990).

Public belief in at least some quasi-science is widespread. One study indicates that more than half the U.S. population believes they have personally had a paranormal experience (McCready & Greeley, 1976). Some scientists are concerned that public belief in quasi-science interferes with public understanding of and judgment about real science and that media coverage encourages such belief. Worried about the public's belief in pseudoscience, they started the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP). CSICOP's journal, now called the Skeptical Inquirer, is devoted to scientific examination of quasi-science, usually debunking paranormal claims. The committee's concern about overly credulous mass media coverage of the paranormal is reflected in frequent complaints in the journal about paranormal reporting in the press and on TV. CSICOP also put forward guidelines suggesting that mass media stories and programs about the paranormal either include scientific doubts about the phenomenon or identify the material as science fiction (Frazier, 1977). A suggested CSICOP astrology disclaimer has also been adopted by more than 30 newspapers (Frazier, 1990).

However, almost nothing is known about why people are interested in such stories or about the effects of such stories on receivers. One possibility is that people are skilled at compartmentalizing belief systems, and that quasi-science has little effect on public understanding of science. Another possibility is that people are motivated to read quasi-science stories because they find them entertaining and don't take them seriously at all. However, it is also possible that many people confuse real and quasi-science. That could have profound implications for public understanding and decision making about a variety of scientific, technical, and military issues.

The current study is aimed at determining what factors predict motivation to read newspaper science and quasi-science stories as one step in a larger examination of interest in and effects of both real-science and quasi-science stories.

Interest in Mass Media Science Stories

If it is important for the public to be well informed about science and science policy (Miller, 1986), then it is important to understand what motivates people to read science stories in the mass media.

Several models of interest in science stories can be assembled from the literature. One approach focuses on familiarity and prior exposure. The claim is that an elite interested audience reads science stories (Miller, 1986). This audience supposedly focuses on a small number of topics--often as a result of formal schooling in those topics (Miller & Barrington, 1981). However, other studies indicate that familiarity is at best a minor factor in interest ratings of science stories (Shapiro, 1988).

A second approach focuses on difficulty. This grows out of the readability score tradition. A major focus of science journalism courses and texts is getting the public to understand the technical issues by simplifying the material for a relatively unsophisticated audience (for example Burkett, 1973; Sachsman, Greenberg, Sandman, Fuerst, Cooke & Van Leer, 1988). The belief is that the difficulty of science stories is a major barrier to interest. However, there is little evidence to support this. The selection and comprehension of science stories does not seem to be influenced by the readability of the article (Grunig, 1980). In reviewing the readability literature, Severin and Tankard conclude that whether or not a piece of writing is interesting "...turns out to be a different question from whether or not a piece of writing is easy to understand" (Severin & Tankard, 1988, p 69).

More recently an arousal-relevance approach has evolved (Shapiro, 1988). Here two factors determine interest. First, readers may be motivated in part by stimulation seeking (Donohew, Nair & Finn, 1984; Finn, 1983; Finn, 1984). One way to stimulate a science audience is to make the story entertaining.

Also a number of studies indicate that the perceived relevance of technical information increases interest. For example, knowledge gap effects are modified by relevance to self or by social relevance (Ettema, Brown & Luepker, 1983; Genova & Greenberg, 1979).

These four possible predictors of interest (familiarity, difficulty, entertainment and relevance) were investigated in several studies that asked college students to rate television and radio science stories after seeing them. The studies found that the relevance of a story to the receiver and the entertainment value of the story predicted more than half of the variance in interest. On the other hand familiarity and difficulty predicted small or insignificant amounts of variance in interest (Shapiro, 1988).

One unanswered question is whether anticipating those same factors will predict the motivation to read a science story in the first place. Based on the results of previous studies:

H1: Motivation to read newspaper real-science stories will increase as the person's perception of the relevance of the story increases.

H2: Motivation to read newspaper real-science stories will increase as the perceived entertainment value of the story increases.

H3: Motivation to read newspaper real-science stories will not be related to the perceived difficulty of the story.

H4: Motivation to read newspaper real-science stories will not be related to the perceived familiarity of the story.

Belief in the Paranormal

The majority of the general public and of college professors may be believers in the paranormal. One national survey found that nearly 60 percent reported experiencing ESP or deja vu; about a quarter reported experiencing clairvoyance or contact with the dead (McCready & Greeley, 1976). A study of students and adults in Charlottesville, Virginia also found more than half of those surveyed said they'd experienced ESP. A majority or a sizable minority considered astrology, life after death and reincarnation at least a possibility (Palmer, 1979). About two-thirds of college professors in one survey thought ESP was at least a likely possibility (Wagner & Monnet, 1979). A 1973 Gallup Poll indicated that more than half the American population believed in UFOs and 11 percent said they had seen one (cited in MacDougall, 1983).[1] Interestingly, one study found the 18 percent of a national sample who had frequent paranormal experiences rated substantially higher in psychological well-being, raising the possibility that "mysticism may well be good for you" (McCready & Greeley, 1976).

Clearly some scientists are concerned about quasi-science, and scientists in general are more skeptical than the general public. However, even among scientists a large minority believe in the paranormal. A fairly recent survey of elite scientists found that about 29 percent of the scientists considered extrasensory perception "established" or "likely" (McClenon, 1984) and another survey found most scientists believed in ESP--but that study used a convenience sample (Evans, 1973). One national survey found that 16 percent of scientists, 32 percent of physicians and 67 percent of the general public believed in life after death. However scientists and physicians were considerably more skeptical than the general public about reincarnation and contact with the dead, with a little less than a quarter of the general public and less than 10 percent of the two professional groups believing in those phenomena (Gallup & Proctor, 1982).

Interest in and Coverage of the Paranormal

Although belief in the paranormal is widespread, little is known about interest in mass media stories about the paranormal. Bogart surveyed 3,000 newspaper readers to see what kind of stories they wanted in an ideal newspaper. He found that about three-quarters of the readers devoting at least some space to health, nutrition, medical advice and the environment, but only about a quarter devoted some spaces to mysterious events, psychic predictions and horoscopes (Bogart, 1981). One suspects that many survey respondents may have been embarrassed to admit an interest in the paranormal and that this is an underestimate. Even if Bogart's estimate is accurate, interest in the paranormal may be at least as large as the audience Miller says is attentive to science policy issues (Miller, 1986).

Some research has been done on coverage of the paranormal in the press. A study of science coverage in three mainstream dailies and three supermarket tabloids found virtually no pseudoscience stories outside of one supermarket tabloid (Hinkle & Elliott, 1989). But that was almost certainly an artifact of their sampling method. Another study found 222 stories about psychic phenomena in four mainstream newspapers between 1977 and 1988 (Klare, 1990). In an informal search of indices for a half-dozen large daily newspapers between 1985 and 1989, the authors of this paper found dozens of stories about ESP and life-after-death phenomena and well over 100 stories about UFOs. Over a number of years, MacDougall was able to accumulate a sizable book full of examples of mainstream mass media stories about various mysterious groups and phenomenon (MacDougall, 1983).

Little systematic research has examined whether these stories have an effect on their audience. About two-thirds of the scientists in one study cited newspapers as contributing to their opinion about ESP. Those citing personal experience and television were more likely to believers than those citing other sources (McClenon, 1984). But, a study of college professors found that those citing newspaper and magazines as a source of information were somewhat more positive toward ESP than were those not citing that source (Wagner & Monnet, 1979).

Defining Quasi-Science

At first glance, it seems simple to define quasi-science as phenomena rejected by the mainstream scientific community. However, the fact that many scientists believe in some paranormal phenomena makes it difficult to distinguish between real science and quasi-science.

In this study, both the topics and the treatment of some of those topics distinguishes quasi-science stories from real-science stories. We define quasi-science topics as topics traditionally associated with the paranormal or the occult (ESP, astrology) and topics scientists with relevant specialized knowledge are likely to consider incredible. Thus, astronomers and physicists are generally skeptical about UFOs; medical researchers would doubt reports about animal organs being successfully transplanted in a human. We define quasi-science stories as news stories that treat events concerning quasi-science topics as established fact.

We define real-science topics as topics that specialists in a particular scientific specialty would consider of legitimate concern in that area. Real-science stories report on information arrived at through commonly accepted methods in that scientific community, or reports, as controversial, a subject of legitimate debate within that specialized scientific community.

The authors recognize these definitions are flawed. For one thing, there is considerable debate about the scientific legitimacy of investigating the paranormal (McClenon, 1984 as well as numerous articles in journals of paranormal studies and in the Zetetic Scholar and the Skeptical Inquirer). Even when the paranormal is not involved, intense debates about what is science or scientific can erupt--witness the debate over so-called cold fusion. In addition, the question of "what is science?" is not only well beyond the scope of this modest study, but unresolved in centuries long debates by scholars who specialize in that area. Nonetheless, we believe that the stories used in this study would be classified similarly by believers and non-believers alike within the scientific community. We suspect that most general newspaper readers would also make such distinctions.

Given our definition, there is little in the literature to guide predictions about motivations to read newspaper articles about quasi-science. However, it seems logical that more people will be skeptical about quasi-science than about real-science. If so, those people's interest in science stories should be based on entertainment value. On the other hand, if a reader perceives a quasi-science story to be relevant, that should also predict interest. The following hypothesis are based on that logic.

H5: Motivation to read newspaper quasi-science stories will increase as the person's perception of the relevance of the story increases.

H6: Motivation to read newspaper quasi-science stories will increase as the perceived entertainment value of the story increases.

H7: Motivation to read newspaper quasi-science stories will not be related to the perceived difficulty of the story.

H8: Motivation to read newspaper quasi-science stories will not be related to the perceived familiarity of the story.

H9: If a reader thinks a quasi-science story is real, relevance will be the best predictor of motivation to read a newspaper quasi-science story.

H10: If a reader thinks a quasi-science story is not real, entertainment value will be the best predictor of motivation to read a newspaper quasi-science story.

Methods

Subjects

Subjects were recruited at an outdoor downtown shopping area in Ithaca, NY--a college town in western New York State in a rural area. (The year-round population of Ithaca is about 30,000 and of the surrounding county is about 80,000). Participants were offered a coupon for a free cup of coffee or a free muffin at a nearby coffee shop as an incentive. Respondents completed 197 questionnaires over two days in late June. Typically respondents spent about 15 minutes on the questionnaire.

The Questionnaire

A large pool of science, quasi-science and non-science headlines was collected. The science and non-science headlines came from a variety of daily newspapers. The quasi-science headlines all came from The Weekly World News a supermarket tabloid that seems to be the only newspaper to run a number of such stories in virtually every issue and treat them as fact (see Hinkle & Elliott, 1989). From that pool, four headlines of each type were randomly selected.[2]

The 12 headlines were ordered randomly. On each page, respondents were asked to rate each headline on a particular characteristic. Ratings were done on a seven point scale anchored by an extreme of the characteristic at each end. Respondents were asked to rank the stories represented by each headline on eight characteristics. The anchors for each characteristics were: very difficult-not at all difficult; very real-not at all real; very informative-not at all informative; very motivated to read-not at all motivated to read; very interested-not at all interested; very familiar--not at all familiar; very entertaining-not at all entertaining; very relevant-not at all relevant. To control for order effects, the order of the ratings was varied using a digram-balanced latin square design. Respondents were randomly assigned to an order.

After rating the headlines, respondents were asked to answer a series of questions about media use, attention to media topics, and a variety of demographic questions.

Scales

For each rating, the four real-science headlines were combined to form a real-science rating on that variable, and the four quasi-science headlines were combined to form a quasi-science rating on that variable. There was one exception. Since interest and motivation seemed to be highly correlated, the motivation and interest items were combined.

The result was seven scales. Reliabilities (Chronbachs Alpha) ranged from 0.65 to 0.87 (see Table 1).

TABLE 1 About Here

Results

Description of Respondents

The sample was almost exactly evenly divided between men and women (97 women, 100 men). In general, the sample was young (average age 30.4) but ranged up to 65. They were generally well educated, averaging almost 3 years of college; only about 16 percent had only a high-school education or less. The average household income was in the $30,000 to $40,000 range, but was skewed toward low income, with about half in the $20,000 to $30,000 range or less. Racially, the group was about 83 percent white. Politically, they averaged liberal to somewhat liberal. Self report of social class was normally distributed with almost all (about 89 percent) considering themselves somewhere in the middle class. On average they reported watching about 7 hours of television news and documentaries during an average week, reading a daily newspaper often, and reading weekly newspapers and weekly news magazines sometimes. Few reported reading supermarket tabloids.

Comparing Real Science to Quasi-Science

In general interest/motivation in real science (median = 4.88 on 7 point scale) was significantly higher than the interest/motivation in quasi-science (median = 2.5 on a 7 point scale) ($t = 12.1$; $df = 182$; $p < .001$).

An obvious question is whether the same people are interested in real science and quasi-science. The correlation between interest/motivation in real science and interest/motivation in quasi-science was mildly but significantly negative ($r = -.17$; $N = 182$; $p = .01$) indicating that to some extent interest in one was related to a lack of interest in the other. After splitting interest/motivation in each type of story at the median, only about 19 percent of the respondents fell into the cell indicating high interest in both (see Table 2).

TABLE 2 About Here

For the other six rating scales, respondent rated real-science stories and quasi-science stories significantly differently. Real-science stories were seen as significantly more relevant, less entertaining, more difficult, more familiar, far more real, and more informative (see Table 3).

TABLE 3 About Here

Tests of Hypotheses

To test the hypotheses, two regression equations were created. One equation predicted the scale for interest/motivation in real science using the real-science scales for relevance, entertainment value, difficulty, familiarity, informativeness and perceived reality. The other equation predicted interest/motivation in quasi-science stories using the corresponding quasi-science scales. Several demographic variables that in other studies have shown a relationship to belief in quasi-science were added to both equations, including age, education, gender, race (coded as white and non-white), social class and income. The results of the simultaneous regression equation are shown in Table 4.

TABLE 4 About Here

Real-science hypotheses. As predicted in hypotheses 1 and 2, the more relevant the story was perceived to be to the respondent's life and the more entertaining the respondent thought the story would be, the more interested/motivated the respondent was to read real-science stories. The anticipated relevance of the story appeared to be a little better predictor ($pr = .36$; $p < .001$) than the anticipated entertainment value ($pr = .30$; $p < .001$), but both were highly significant predictors, even after controlling for all other variables. Hypotheses 1 and 2 are supported.

As predicted in hypothesis 3, the anticipated difficulty of the story was not a significant predictor of interest/motivation. However, contrary to the prediction in hypothesis 4, the more familiar the story was perceived to be, the more interested/motivated the respondent ($pr = .21$; $p < .01$). Hypothesis 3 was supported. Hypothesis 4 was not supported.

There were two other significant predictors of interest/motivation in real-science stories. Older respondents tended to be more interested in real-science stories than younger respondents ($pr = .23$; $p < .01$). Also, the more informative the respondents anticipated the story would be, the more interested/motivated they were ($pr = .31$; $p < .001$).

Overall, the equation predicted more than half the total variance in interest/motivation to read real-science stories ($R^2 = .52$; $F(12,149) = 13.3$; $p < .001$).

Quasi-science hypotheses. As predicted in hypotheses 5 and 6, the more relevant the story was perceived to be to the respondent's life and the more entertaining the respondent thought the story would be, the more interested/motivated the person was to read a quasi-science story. Both variables predicted very significant amounts of variance. In this case, anticipated relevance of the story ($pr = .37$; $p < .001$) and the anticipated entertainment value ($pr = .38$; $p <$

.001) predicted about the same amount of variance after controlling for the other variables. Hypotheses 5 and 6 are supported.

As predicted in hypotheses 7 anticipated difficulty was not significantly related to interest/motivation. However, contrary to hypothesis 8 the more familiar the quasi-science story seemed, the more the person was interested/motivated ($pr = 0.16$; $p < .05$). Hypotheses 7 is supported. Hypothesis 8 was not supported.

Hypotheses 9 and 10 predict that perceived reality will interact with relevance and with entertainment value. Specifically hypothesis 9 predicts if a quasi-science story is perceived as very real, relevance will be the best predictor, and hypothesis 10 predicts if a quasi-science story is perceived as not very real, then anticipated entertainment value will be the best predictor of relevance/entertainment.

To test this, interaction terms were entered hierarchically into the equation predicting interest/motivation in quasi-science (Cohen & Cohen, 1983; Nie, Hull, Jenkins, Steinbrenner & Bent, 1975). To test hypothesis 9, the interaction between perceived reality and anticipated relevance was added to the equation. The interaction was not significant. To test hypothesis 10, the interaction between perceived reality and anticipated entertainment value was added to the equation. The interaction was not significant. Hypotheses 9 and 10 were not supported.

There was one other significant predictor of interest/motivation in quasi-science stories. The more informative the respondents anticipated the story would be, the more interested/motivated they were ($pr = .29$; $p < .001$).

Overall, the equation predicted more than half the total variance in interest/motivation to read quasi-science stories ($R^2 = .55$; $F(12,146) = 15.0$; $p < .001$).

Discussion

A relatively small number of variables predicted more than half the variance in anticipated interest/motivation to read both real-science stories and quasi-science stories. For both types of stories, the more anticipated relevance of the story, the more anticipated entertainment value, the more anticipated familiarity and the more anticipated informativeness of the story, the more interested/motivated the respondent was to read the story. All were highly significant independent predictors. In addition, for real-science stories, the older the respondent the more interested/motivated the respondent.

These results for anticipated interest are very consistent with several studies looking at the determinants of interest ratings after actually seeing science stories. Thus, people probably select stories based on pretty much the same criteria as they use for evaluating how interested they were after seeing a story. The major factors seem to be perceived relevance and perceived entertainment value. This supports an arousal/relevance model of interest in science stories.

The role of relevance in predicting interest in real-science stories is not a surprise. But since entertainment is not necessarily the first thing that comes to mind when thinking about science stories, the consistent role of entertainment value is somewhat a surprise. There are at least two other results here that, although predicted, are surprising.

First, although to a certain extent interest in real science predicts a lack of interest in quasi-science stories, the perceptions about a story that predict interest are remarkably similar for both types of story. If a person perceives a real-science story as relevant, entertaining, informative and familiar, he or she is likely to be interested. If a person perceives a quasi-science story as relevant, entertaining, informative and familiar, he or she is likely to be interested.

Most puzzling here is the role of relevance in predicting interest in quasi-science stories. Such results indicate that interested readers do take quasi-science stories seriously. One possible explanation is that if a respondent perceives the story to be real, then the story could indeed be relevant to his or her life. A story about a cross-species heart transplant could be very relevant to a person's future health--if it really happened. Indeed for the quasi-science stories the zero order correlation between perceived reality and interest/motivation is highly significant ($r = .47$; $p < .01$) as is the correlation between perceived reality and relevance ($r = .54$; $p < .01$). But after controlling for other variables, perceived reality does not predict a significant amount of the variance in interest/motivation and the interaction between perceived reality and relevance is not significant. Thus, perceived reality as a contingent condition for relevance to predict interest/motivation in quasi-science stories does not seem to be tenable.

An alternative possibility is a third variable that predicts both perceived reality and relevance and acts as a contingent condition in the effect of relevance on interest. Some likely candidates seem to be belief in topics like the paranormal and/or direct experience with the paranormal. As indicated in the literature review, such direct experience with the paranormal is fairly common. Future studies in this area should probe such beliefs, which may be closely related to religious beliefs.

Another somewhat unexpected result is that perceived familiarity was a significant unique predictor of interest/motivation in both types of stories. This result seems to reinforce Miller's notion that, at least to a certain extent, there is a specialized audience that is interested in specific science topics. Interestingly, this seems to be true of quasi-science as well as real science.

Despite the focus on simplification in most texts and most courses in science journalism, difficulty just doesn't seem to count for much in predicting interest in science writing. If a person sees the topic as relevant and informative, and if the person anticipates the story will be entertaining, anticipated difficulty does not seem to be much of a barrier to interest. Science writers and science journalism teachers may want to consider reapportioning some effort away from concerns about simplification and toward making stories seem relevant and entertaining.

An obvious shortcoming of this study is the convenience sample. However, although skewed toward the relatively young and well educated, it was a far more heterogeneous group than used in previous studies in this area. Although we cannot depend on this sample for estimates of population parameters, it probably is adequate for determining general relationships in the adult population. This seems especially true since statistically controlling for a number of demographic variable made little difference in the relationship. Even the zero-order correlations between the demographic variables and interest/motivation had only 3 modestly significant relationships out of 12 (Table 5). And only one of those demographic variables, age in the real-science equation, added significant unique variance to a regression equation.

TABLE 5 About Here

This study largely supports arousal and relevance as the best predictors of interest in science stories. At the same time it raises some intriguing questions about how those interested in quasi-science stories determine the relevance of those stories and what effect quasi-science stories have on readers' understanding of science.

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TABLE 1
Scale Reliabilities
(Chronbachs Alpha)

Real Science

Scale	items	N	alpha
Interest/Motive	8	191	0.78
Relevance	4	192	0.69
Entertainment	4	194	0.78
Difficulty	4	195	0.87
Familiarity	4	191	0.73
Real	4	192	0.70
Informative	4	192	0.77

Quasi-Science

Scale	items	N	alpha
Interest/Motive	8	185	0.86
Relevance	4	193	0.66
Entertainment	4	193	0.82
Difficulty	4	194	0.86
Familiarity	4	190	0.83
Real	4	192	0.67
Informative	4	191	0.65

TABLE 2

Cross Tabulations
Interest in Real Science vs Interest in Quasi-Science

		Quasi-Science Interest	
		Low	Hi
Real-science Interest			
Low	N	45	55
	Percent	22.8	27.9
High	N	59	38
	Percent	29.9	19.3

chi-square = 4.95
df = 1
p = .03

TABLE 3

Paired Sample T-tests
Comparing Real-Science and Quasi-Science Variables

Interest/ Motivation	Number of Cases	Mean	Standard Deviation	t Value	Degrees of Freedom	2-Tail Pro
Real	182	4.7205	1.253	12.09	181	.000
Quasi	182	2.8029	1.531			
Relevance	Number of Cases	Mean	Standard Deviation	t Value	Degrees of Freedom	2-Tail Pro
Real	190	4.5895	1.393	21.74	189	.000
Quasi	190	2.0158	1.188			
Entertainment	Number of Cases	Mean	Standard Deviation	t Value	Degrees of Freedom	2-Tail Pro
Real	193	3.3122	1.597	-5.63	192	.000
Quasi	193	4.3070	1.879			
Difficulty	Number of Cases	Mean	Standard Deviation	t Value	Degrees of Freedom	2-Tail Pro
Real	194	4.4356	1.680	12.15	193	.000
Quasi	194	2.3608	1.631			
Familiarity	Number of Cases	Mean	Standard Deviation	t Value	Degrees of Freedom	2-Tail Pro
Real	188	4.0279	1.411	5.24	187	.000
Quasi	188	3.1875	1.826			
Perceived Reality	Number of Cases	Mean	Standard Deviation	t Value	Degrees of Freedom	2-Tail Pro
Real	189	5.5966	1.072	32.64	188	.000
Quasi	189	1.9259	1.083			
Informative	Number of Cases	Mean	Standard Deviation	t Value	Degrees of Freedom	2-Tail Pro
Real	188	5.4069	1.254	25.37	187	.000
Quasi	188	2.3218	1.229			

TABLE 4

Partial Correlation Coefficients and Beta Weights for Regression Equation Predicting Interest/Motivation

	Real Science		Quasi-Science	
Variable	Beta	pr	Beta	pr
Age	0.19	0.23**	0.00	0.00
Education	0.11	0.14	-0.07	-0.07
Gender	0.05	0.06	-0.06	-0.09
Race	-0.04	-0.06	-0.09	-0.12
Social Class	-0.09	-0.10	0.03	0.04
Income	0.07	0.08	-0.03	-0.04
Relevance	0.31	0.36***	0.34	0.37***
Entertainment	0.23	0.30***	0.29	0.38***
Difficulty	-0.04	-0.06	0.00	0.01
Familiarity	0.16	0.21**	0.12	0.16*
Real	0.07	0.08	0.11	0.12
Informative	0.29	0.31***	0.29	0.29***
multiple R^2	0.52***		0.55***	
degrees of freedom	(12,149)		(12,146)	

* $p < .05$

** $p < .01$

*** $p < .001$

TABLE 5

Zero Order Correlations with Interest/Motivation

Variable	Real Science	Quasi-Science
Age	0.16*	-0.03
Education	0.18*	-0.17*
Gender	0.05	-0.03
Race	-0.03	-0.08
Social Class	0.03	0.02
Income	0.08	-0.05
Relevance	0.54**	0.59**
Entertainment	0.34**	0.29**
Difficulty	-0.04	0.29**
Familiarity	0.32**	0.17*
Real	0.38**	0.49**
Informative	0.46**	0.57**
N	161	159

* $p < .05$

** $p < .01$

Endnotes

1. For some reason, at this point the authors feel it necessary to reveal their own bias. We consider all the paranormal phenomena mentioned here highly unlikely.

2. The Real-Science headlines were: 1. "Scientists Race to Explain How Superconductors Work" 2. "As Bias Crime Seems To Rise, Scientists Study the Roots of Racism 3. "Tapping Ocean's Cold for Crops and Energy [Water From the Depths Also Offers Nutrients and Purity]" 4. "A Key to Post - Traumatic Stress Lies in the Brain Chemistry, Scientists Find"
The Quasi-Science headlines were: 1. "Miracle Transplant of the Century Still Going Strong! Man, 74, Lives 19 Years With A **DOLPHIN'S** Heart" 2. "Husband's Psychic Power Kept Wife's Cancer at Bay ... for 12 Years!" 3. "U. F. O. Bulletin: We're Not Alone, Aliens Eat Our Cows -and More" 4. "Using a Horoscope to Guide You When the Brain Fails"

MASS MEDIA AND THE THIRD AIDS EPIDEMIC:

AIDS KNOWLEDGE AND ACCEPTANCE IN A RURAL AREA

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ABSTRACT

Recursive path analysis was used to test the relationships between motivational, ability, risk, media use, and knowledge variables on the acceptance of people infected with HIV/AIDS. The tested model was based on the elaboration likelihood model (Petty & Cacioppo, 1986) and situation theory (Grunig & Childers, 1988). The findings, based on a sample of 366, indicated that empathy, information seeking, AIDS familiarity and AIDS understanding had direct effects on the acceptance of people with HIV/AIDS.

MASS MEDIA AND THE THIRD AIDS EPIDEMIC

AIDS KNOWLEDGE AND ACCEPTANCE IN A RURAL AREA

Introduction

Most of us think of AID as a worldwide health epidemic threatening our health, the financial stability of our health care system, and our sexual behaviors. However, the problems associated with AIDS require thinking in broader terms. AIDS is not *an* epidemic, it is three related epidemics. The two epidemics most often associated with AIDS include the epidemic of HIV (the virus that causes AIDS) and the epidemic of AIDS and AIDS related illnesses. The third epidemic associated with AIDS involves the "social, cultural, economic, and political reaction and response to the first two epidemics" (World Health Organization, 1990, p. 1).

This third epidemic, dealing with the social, cultural, economic and political reaction and response to AIDS, touches all areas of our lives. It is this third epidemic that is particularly important for study by mass media scholars. Extensive media campaigns directed at informing the public have been mounted with some success, at least in terms of exposure (Freimuth, Hammond, Edgar, & Monahan, 1990). There is more to do, a point made by Herek and Glunt (1988, p. 889): "Public policy not only must respond to the technical issues of treatment and prevention but also must help to establish clear social norms of respect and compassion for HIV-infected persons."

Recognition of AIDS as a national health problem has increased rapidly. In 1986, Elliott and Rosenberg found that approximately one-third (31.2%) of a Philadelphia sample was able to correctly tell the interviewers what "AIDS" stood for. By August of 1988, 89% of adults knew that AIDS was a fatal disease and 83% knew it had no cure (Centers for Disease Control, 1990). Most of us now know, only too well, what the disease is and what it can do.

That knowledge is largely the result of intensive information campaigns by public health agencies and news coverage by the mass media. The statistics given by the Centers for Disease Control in Atlanta (1991a) serve to illustrate the magnitude of the problem facing the nation. From 1981 through 1990, 100,777 AIDS deaths were reported. Of this number, 31,196 deaths occurred in 1990 alone. AIDS had become the second leading cause of death for men in the age group from 25 to 44 and the eighth leading cause of death among women in the same age group.

The disease is not equally distributed around the nation and in certain urban areas the statistics are even more alarming. In San Francisco, Los Angeles, and New York City, AIDS is the leading cause of death among young adult men. In New York state and New Jersey, AIDS is the leading cause of death among black women 15-44 years of age. And, in New York state in 1988, AIDS was the leading cause of death among Hispanic children 1-4 years old and the second leading cause of death among 1-4 year old black children .

Economic costs are high and will continue to grow. Insurance companies are estimated to have paid out $1 billion on AIDS related claims in 1989, a 71% increase over 1988.

One million Americans are believed to be infected with the AIDS[1] virus. From 1991 to 1993, it is estimated that between 165,000 and 215,000 people in the United States will die from the disease, approximately twice as many deaths from AIDS as occurred from 1981 to 1990.

As AIDS spreads from urban centers to rural areas , it becomes necessary to develop models enabling us to understand how people living in small town and rural America respond to people infected with AIDS. As more and more rural AIDS patients seek treatment , demands on medical and social support services will increase as they already have in urban centers. The knowledge people in rural areas have about AIDS how they accept people living with AIDS are important considerations for the development of appropriate programs for coping with the third AIDS epidemic.

In this study, we interviewed a sample of subjects 18 and older from rural Illinois to ascertain their orientations toward individuals infected with AIDS. In doing so, we developed a model based on Petty and Cacioppo's elaboration likelihood model (1986) and on Grunig's situational theory (Grunig & Childers, 1988). The purpose of the model, and the survey, was to test possible influences, including media exposure and media information seeking, on knowledge of AIDS and orientations toward people infected with the disease. We interviewed 366 subjects about AIDS between March 3 and March 7, 1991.

The Model

Development

The theoretical component of the model is based on work by Petty and Cacioppo (1986) with significant contributions by Grunig and Childers (1988) utilizing the elaboration likelihood model and situational theory, respectively.

In the elaboration likelihood model (Petty & Cacioppo, 1986), the level to which a message is processed depends upon the person's motivation and ability. Motivation depends on the intentions (goals) the person might have for processing the message and the effort necessary to process it. By itself, motivation is not enough to guarantee that careful and thoughtful processing will occur. People must also have the appropriate skills and be in a suitable situation to process the message. The likelihood that any specific message, particularly one appearing in the mass media, will be processed in a careful and thoughtful manner is usually low.

When motivation is low, individuals are more likely to rely on peripheral message cues (pleasant music, color, attractive actors, etc.) in developing their response to a message. When motivation is high, but ability is low, individuals may also follow a peripheral route in developing a message response. It is when a person's motivation is high *and* the the person has the necessary processing skills *and* the person is in a situation suitable to receiving the message that a person will elaborate on the message through increased information processing. Here, depending on their initial orientation toward the subject of the message, people's attitudes will change positively, negatively, or be uninfluenced (if no new cognitive elements have been added). Attitudes changed through this central processing route will tend to be relatively long lasting and resistant to later counterpersuasive attempts.

While the elaboration likelihood model begins with the message, situational theory (Grunig and Childers, 1988) starts by looking at the factors influencing whether or not information seeking and processing takes place. Then, based upon whether or not information processing and/or seeking occurs, the model looks at how the breadth and depth of cognitive processing are influenced. Finally, breadth and depth of processing result in the development of situational and cross-situational attitudes.

By integrating the two approaches, one with its emphasis on the influence of messages on attitudes and the other on factors influencing information seeking and processing, we hope to increase our understanding of the way mass media exposure and attention can influence people's knowledge about and acceptance of people infected with the AIDS virus. The model we have developed is presented in Figure 1.

Unlike personal involvement, which is determined largely by the environment and situation, empathy and intellectual interest in science/medicine are rooted in the "individual differences" that exist between people (Petty & Cacioppo, p. 219). Empathy, which we have borrowed from Davis's (1980) idea of "empathic concern," is defined by us as "the tendency to experience feelings of warmth, compassion and concern for others undergoing negative experiences." The idea that individuals who have the ability to psychologically place themselves in the position of others living with AIDS should influence perceptions of risk, recognition of AIDS as a problem, and the acceptance of people living with AIDS.

Intellectual interest in science/medicine is a variable we have adapted from work by Elliott and Rosenberg (1987) and is defined as "curiosity regarding the process and factors influencing a class of issues or behaviors related to science and medicine." Our intellectual interest concept shares meaning with what Grunig and Childers's have called "internal involvement" (1988, p. 10-11). They see internal involvement as a general motivating force leading people to process information. We see intellectual interest in science/medicine as a general characteristic of individuals who have a continuing interest in knowing about developments in the scientific and medical fields, the type of people who would seek out information about current scientific and medical events, including AIDS.

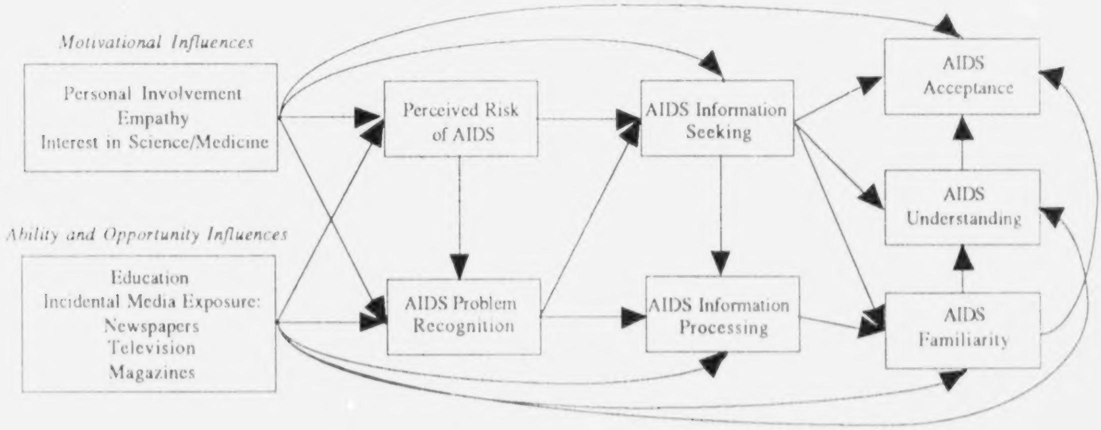

Figure 1: Model of the Factors Influencing the Acceptance of People Infected with the AIDS Virus

The two factors determining the chances for message elaboration are motivation and ability (Petty & Cacioppo, 1986). Motivation is defined as a characteristic of the situation or individual "that propels and guides people's information processing and gives it its purposive character" (p. 218). In Figure 1, we have advanced three concepts likely to be associated with people's motivational states regarding AIDS. The first, personal involvement, is defined as "the extent to which people have experienced an issue or problem in a direct way." Our concept of personal involvement is similar to Petty and Cacioppo's "personal relevance," Grunig and Childers's (1988) "external involvement," and has some conceptual similarity to the concept of "involvement" developed by Chaffee and Roser (1986).

To tap an individual's ability and opportunity to process messages related to AIDS, we have relied on two concepts. As a measure of ability to process sometimes complex messages, we have used education, defined as "formal training in systems of organization, thought, and presentation."

Our idea of incidental media exposure is suggested as a way of tapping people's general "opportunity to be exposed to a specific message or to a class of messages." To the degree that people regularly read, watch, and listen to mass mediated messages, they increase their chances of some exposure to stories about AIDS. The level of processing of these messages depends on other factors, to be discussed next.

Motivational, ability and opportunity factors are seen as influencing people's perceived risk of AIDS infection and their recognition that AIDS is a problem directly influencing their lives. For our concept of perceived risk, we have followed the conceptualization used by Dunwoody and Neuwirth (1988) in what they termed as the "cognitive component" of risk. We defined perceived risk as "the possibility for AIDS infection to self or to family and friends." This definition is close to Grunig and Childers's (1988) external level of involvement, "when people expect an issue to have significant consequences for their own lives" (p. 12) and to Petty and Cacioppo's (1986, p. 81) personal relevance, "the extent to which an advocacy has 'intrinsic importance' . . . or 'personal meaning.'. . ."

Problem recognition is defined as "the potential seriousness which AIDS poses for various groups to which the person has ties." The groups of greatest interest for us were the individual's immediate family and the community in which the individual lived.

Grunig and Childers (1988) have also suggested the linkages between involvement (our perceived risk) and problem recognition to information seeking and processing behaviors. We have elected to define information processing as a low level, peripheral type of behavior. By our definition, information processing refers to "the person's awareness of seeing or hearing something about AIDS from media or other information sources." Information seeking is a more directed form of media behavior, one requiring a conscious decision by the individual to locate and process AIDS specific information. We have defined AIDS information seeking as "the purposive search for information about AIDS outside of incidental media exposure channels." An example would be someone's stated willingness to read a detailed magazine article about AIDS or a person's voluntary attendance at a public presentation regarding AIDS.

Information seeking is seen as linked to perceived risk, problem recognition, and to motivational factors, particularly personal involvement and interest in science/medicine. Information processing is hypothesized as being influenced by problem recognition, education and incidental media exposure, and by information seeking which, obviously, would increase information processing.

Finally, in the last stage of the model, we have predicted that AIDS familiarity, which we have defined as "common or general knowledge about AIDS," will be directly influenced by information seeking, information processing, education and incidental exposure. AIDS familiarity, along with information seeking, will in turn lead to a deeper knowledge of AIDS. We have labeled this as "AIDS understanding." Conceptually, we have defined AIDS understanding as "an awareness of the process, symptoms, and treatment used for AIDS infection." The information necessary to form an "understanding" of AIDS is not commonly available through routine or incidental communication activities.

The last element of the model, AIDS acceptance, is defined as "a concern for the social and medical rights of individuals infected with AIDS." Our concept, which takes a positive approach to the relationship between people in a community, whether infected by the AIDS virus or not, is somewhat the mirror image of what others have defined as a "fear of contact" with people infected with AIDS (Bouton, et al., 1987). The sources of influence for this variable include the motivational influences, AIDS understanding, AIDS familiarity, and AIDS information seeking. While it is not necessarily obvious that these influences would make a person more accepting of people infected with the AIDS virus, two competing hypotheses can be advanced.

First, it is possible that simple media exposure could make people *less* accepting of people infected by the AIDS virus. Elliott, Mahmoud, Baker and Camphor (1991) found that *Time* and *Newsweek* were likely to give a negative slant to the headlines for stories about AIDS, particularly when such stories referred to homosexuals and IV drug users. Such a negative slant could well lead to stigmatizing all people infected with the AIDS virus. Second, it is similarly reasonable to predict that higher levels of knowledge about how difficult it is to spread the AIDS virus should reduce the perceived threat of infection and result in an increased acceptance of people with AIDS.

Empirical Support for the Model

While this model has not been tested previously, various elements of it have been part of other research efforts. What we have labeled as "personal involvement" has been shown to consistently be related to a number of AIDS risk measures. At the journalistic level, both Shilts (1987) and Kinsella (1989) have pointed out that mainstream mass media sources did not cover the growing AIDS epidemic until people known to reporters and editors became infected with the disease. Dunwoody and Neuwirth (1988), using an undergraduate student sample, found that knowing people with AIDS was related to talking with other people about AIDS.

The hypothesized linkages between intellectual interest in science/medicine and AIDS problem recognition receives some support in the work done by Grunig and Childers (1988). Using LISREL analysis techniques, they found a significant relationship between internal involvement (conceptually similar to our intellectual interest) and problem recognition. Our linkage between empathy and both AIDS problem recognition and the perceived risk of AIDS will, for the moment, be advanced without empirical support. However, the logic of the linkage, that people high in empathy will be able to vicariously share the feelings of people with AIDS, should result in an increased feeling of vulnerability to the disease and to a recognition that AIDS does pose a genuine problem.

Education, as our measure of a person's ability to process information related to AIDS, has been shown in several studies to be related to a wide variety of variables related to AIDS. Stroman and Seltzer (1989) found that education was positively related to knowledge of AIDS, negatively to support for repression of people infected with AIDS, and positively to support for positive actions related to AIDS. Stipp and Kerr (1989) found an interaction between education and the perceived risk of AIDS in their analysis of data from a 1987 Roper survey. For those in favor of gay rights, higher educational levels were associated with increased perceived risk of AIDS. For those against gay rights, there was virtually no relationship between education and risk. Grunig and Childers (1988) found education to be a significant predictor of "breadth of cognition," a measure similar to our AIDS familiarity concept.

There has also been support linking incidental media use with various AIDS measures. Dunwoody and Neuwirth (1988) found that exposure to newspapers was

AIDS. Newspaper readership was positively related to AIDS knowledge while the frequency of television viewing was negatively related. There was an indication that the frequency of television viewing was related to positive actions related to AIDS.

What we know empirically about the linkages between perceived risk of AIDS and AIDS problem recognition comes from the work of Grunig and Childers (1988). They found that internal problem recognition (something we did not define) was negatively related to information processing and positively to information seeking. The type of problem recognition we have defined is close to their measure of external problem recognition. This was found to relate positively to information processing.

Finally, several findings support linkages between AIDS information seeking and/or information processing and measures of AIDS familiarity, AIDS understanding, and AIDS acceptance. Dunwoody and Neuwirth (1988) found that attention to television was related to AIDS knowledge (measured in a manner similar to what we have defined as AIDS familiarity). Grunig and Childers found that breadth of cognition (also similar to AIDS familiarity) predicted depth of cognition (our AIDS understanding). And, Beam and Bernstein (1989) found correlational evidence linking attention to stories about AIDS and the type of knowledge we have labeled "AIDS understanding."

Method

Sample

Our sample of subjects was selected from people willing to participate in the survey that was conducted from March 3 to March 7, 1991. Interviewers, who were undergraduate students enrolled in a research methods class, student volunteers, and graduate students, telephoned individuals at phone numbers selected from local exchanges using random digit dialing techniques. When someone answered the telephone, the interviewers asked to speak to the person in the household who was at least 18 years old and who had the most recent birthday. We managed to interview 366 subjects and had 453 refusals for a completion rate of 44.7%.

Our sample was split relatively equally between individuals living in a mid-sized southern Illinois university community of about twenty-six thousand (32.8%), a smaller rural city with a population of about ten thousand (25.7%) and rural areas outside of any city (33.3%) or in small rural communities (4.6%). The remainder lived elsewhere, refused to answer the question or had terminated the interview by that time (3.5%).

Demographically, the sample was reasonably well educated with only 8.7% having less than a high school education, 27.9% had a high school education, 23.0% had some college, 21.0% were college graduates and 16.9% had attended graduate school. In terms of age, 12.8% were born from 1906 to 1929, 21.3% between 1930 and 1949, 20.8% in the 50s, 33.9% in the 60s, 7.4% in the 70s, and 3.8% did not supply their age. European Americans made up the largest ethnic group (78.4%) with minorities (8.2%), "other Americans" (8.5%), foreign nationals (1.9%) and don't knows, refusals, and missing responses making up the remainder (2.9%).

The sample was 53.3% female, 44.0% male, with 2.7% missing information on gender. A large percentage of the sample was working full- or part-time (45.6%), were students (working, 21.0%; nonworking, 10.7%), were retired (9.3%), or homemakers (8.7%). The remainder (4.6%) were unemployed, refused to answer, provided an uncodeable response, or had terminated the interview. Politically, the sample tended to be conservative (45.9% indicated they were slightly to very conservative) although there were a reasonable number who indicated they were moderates (19.7%) or liberals (31.6% indicated they were slightly to very liberal).

Exogenous Variables

Motivational influences. We defined and operationalized three factors we thought would be related to an individual's motivation to seek AIDS information and that would be related to perceived risk of AIDS and AIDS problem recognition. The definitions and operationalizations are listed below.

Personal involvement with AIDS was defined as "the extent to which people have experienced AIDS in a direct way." Operationally, we measured this variable by asking people to tell us if the following statements applied to them.

a. I heard about somebody living in this community who has AIDS.
b. Someone I work with is supposed to have AIDS.
c. Someone I know well has AIDS.

We coded this variable as a zero if they answered no to all three questions. Yes answers were scaled as a "1" if they answered yes to the first question, a "2" if yes to the second, and a "3" if yes to the third. A person answering "yes" to all three would thus receive a score of 6. In terms of individual responses, 43.4% had heard of someone in the community with AIDS, 2.7% knew of someone they worked with who had AIDS, and 10.9% mentioned that someone they knew well had AIDS. The mean score for the personal involvement with AIDS measure was 0.83 with a standard deviation of 1.26.

Empathy was adapted from a set of "empathic concern" items developed by Davis (1980). We defined empathy as "the tendency to experience feelings of warmth, compassion and concern for others undergoing negative experiences." The following three items were summed (the item marked with a minus sign was reverse coded) to form our empathy score. The standardized item alpha for the three measures was .68 and the mean score for the scale was 11.98 with a standard deviation of 2.00.

a. Usually, other people's misfortunes don't disturb me a great deal. (-)
b. I often have tender, concerned feelings for people less fortunate than me.
c. I am often quite touched by things that I see happen.

Intellectual interest in science/medicine was defined as "a generalized desire to know and understand what is going on in the science and medical worlds." We were unsuccessful in developing a three item scale to measure this concept and relied on the operationalism below. It had mean of 3.94 and a standard deviation of .82.

> I like to learn about scientific research because it helps me understand what the future will be like.

this concept and relied on the operationalism below. It had mean of 3.94 and a standard deviation of .82.

> I like to learn about scientific research because it helps me understand what the future will be like.

Ability and opportunity factors. We used two sets of measures to tap people's ability to process a message and their opportunity to receive it.

Education was defined as "formal training in systems of organization, thought, and presentation." We operationalized it by asking individuals for the highest grade level they had completed in school. Our responses ranged from the third grade to 22 years of school (M.D.). The mean number of years of schooling was 14.28 years with a standard deviation of 3.05.

Incidental media use refers to a person's typical commitment to using the mass media. We measured incidental media use for television, newspapers, and magazines. Incidental television use was measured by having the respondents tell us, as accurately as they could recall, the amount of time in hours and half-hours they watched television the night before the interview between the hours of 5:00 PM and 10:30 PM. Individuals interviewed on Sunday and Monday nights were asked about their viewing the previous Thursday night. The mean for this variable was 1.88 hours with a standard deviation of 1.64.

For newspapers, we asked how many days they read the newspaper and how much of the newspaper they read (which ranged on a four point scale from "none" to "almost all." Incidental newspaper use was the product of these two measures. The mean for this measure was 10.62 with a standard deviation of 7.34.

Finally, incidental magazine use was the sum of the number of magazines they said they had read at least part of during the last week. The mean for the number of magazines was 1.43 with a standard deviation of 1.23.

Endogenous Variables

The first block of endogenous variables includes measures of risk and AIDS problem recognition.

Perceived risk of AIDS was defined as "the possibility of AIDS infection to family and friends." To measure perceived risk, respondents were asked

> What are the chances, from zero to one hundred, that someone you are close to, a family member or a friend, will get AIDS in the next ten years. The mean perceived risk score for this measure was 35.3.

AIDS problem recognition was defined as "the potential seriousness which AIDS poses for various groups to which the person has ties." Respondents were asked to indicate if they thought AIDS was a serious problem, a problem, a minor problem, or no problem at all for their local community. AIDS was rated as "a problem" or "a serious problem" by 61.7% of our sample. The mean was 2.83 with a standard deviation of .98.

AIDS information seeking was defined as "the purposive search for information about AIDS outside of incidental media exposure channels." AIDS information seeking was measured by summing the positive responses to the following statements. Subjects were asked, "Have you

a. Carefully read several newspaper stories about AIDS?
b. Watched a special program on TV, such as *NOVA*, about AIDS?
c. Asked a friend or a family member questions about AIDS?
d. Read the Surgeon General's awareness guide on AIDS which was sent to nearly every household in May of 1988?
e. Watched a television or film drama about someone with AIDS?
f. Carefully read several magazine articles about AIDS?
g. Read any literature on AIDS passed out by your church, employer, health insurer, or other group you might belong to?"

The mean score for AIDS information seeking was 4.04 with a standard deviation of 1.93.

AIDS information processing refers to "the person's awareness of seeing or hearing something about AIDS from media or other information sources." AIDS information processing was measured by summing responses ranging from never (1) to often (4) in response to, "Within the last month, how often do you recall getting information about AIDS from

a. Family, friends, or coworkers?
b. Health care professionals?"
c. Newspaper stories?
d. Public service announcements on TV?
e. Television programs.
f. Magazine stories."

The mean for AIDS information processing was 15.12 with a standard deviation of 4.05.

Finally, we used two concepts related to people's knowledge and understanding about AIDS and one concept attempting to tap people's acceptance of those infected with the AIDS virus.

AIDS familiarity was defined as "commonly held knowledge about AIDS." We used a number of items in developing this measure adapted from several previous studies (Singer, Rogers, & Corcoran, 1987; Stipp & Kerr, 1989; Centers for Disease Control, 1990), from a report on the epidemiology of AIDS (Curran, et al., 1988) and from recent reports on the transmission of the AIDS virus from an infected dentist to three of his patients (Centers for Disease Control, 1991b). AIDS familiarity scores were developed by giving a point for each false statement given to items a, b, c, and e and a true response for statement d. Respondents were asked to indicate if the statement was true, false, or if they were not sure, to "People can catch AIDS by

a. working alongside someone who has AIDS.
b. eating food prepared by someone who has AIDS.
c. being sneezed on by someone who has AIDS.
d. receiving dental care from someone who has AIDS.
e. using a restroom used by someone who has AIDS."

The mean for AIDS familiarity was 3.90 with a standard deviation of 1.14.

AIDS understanding required a more detailed knowledge of AIDS than AIDS familiarity. We defined AIDS understanding as "an awareness of the process, symptoms, and treatments used for AIDS infection." Operationally, AIDS understanding was formed by summing respondents' correct responses to identification of the agent causing AIDS as a virus, telling what HIV is, naming any of the drugs useful in slowing the progress of AIDS, and identifying Kaposi's Sarcoma as a type of cancer often associated with AIDS. The means for AIDS understanding was 1.31 and a standard deviation of 1.05.

Our final variable of interest was *AIDS acceptance*. This concept was defined as "a concern for the social and medical rights of individuals infected with AIDS." Here we used a number of the items developed by Bouton, Gallaher, Garlinghouse, Lean, Rosenstein, and Young (1987) in the "fear of contact" measures for AIDS and one dealing with the idea of a community AIDS treatment center (Singer et al., 1987). Respondents indicated on a five point scale from strongly disagree to strongly agree to each of the six items below. The responses were then summed into a single scale. The standardized alpha for the scale was .72. Items with a negative sign were reverse coded. The mean for AIDS acceptance was 21.76 with a standard deviation of 3.75.

a. It would bother me to be in the same room with a person who had AIDS. (-)
b. Young children with AIDS should be allowed to play with uninfected children.
c. People who have AIDS should get jobs where they don't come into contact with others. (-)
d. A centralized file containing the names of all people with AIDS should be created. (-)
e. I would still hug a friend even if they had AIDS.
f. It would be all right with me if an AIDS half-way house moved into my neighborhood.

Analysis

We analyzed our model using a recursive (no feedback loops or simultaneous causation) path model with the motivation, ability and opportunity influences as exogenous variables. We proceeded with the path analysis by regressing each endogenous variable, beginning with the appropriate preceding variables shown in Figure 1. Any path (standardized beta) that was not significant ($p \leq .05$) was deleted from the model and the regression rerun with non-significant paths removed (Kenny, 1979; Asher, 1983). To summarize our findings for the model, we adopted the form of presentation suggested by Alwin and Hauser (1981). The calculation of the total effect was accomplished by summing the indirect and direct effects. All statements of hypotheses and relationships have been specified in the presentation of the model diagrammed in Figure 1. We have omitted the paths linking the exogenous variables[2] and the paths to the random disturbance terms for simplicity.

Results and Discussion

Revised Path Model

The revised model with the appropriate path coefficients, based on the linear regression runs on the original model with appropriate deletions for the nonsignificant paths, is presented in Figure 2.

The model resulting from the path analysis conforms closely to the original model presented in Figure 1 with several notable exceptions, particularly the absence from the model of any influence on any of the variables by incidental media use. We will have more to say about that later.

The influence of the motivational variables, particularly empathy, conforms to the hypothesized paths linking them to perceived risk and to problem recognition. The paths shown for personal involvement and empathy to perceived risk are .23 and .19 respectively. This means, since these are the standardized regression coefficients, that an increase of one standardized personal involvement unit results in an increase of .23 in the standardized measure of perceived risk of AIDS. Similarly, the path from empathy to perceived risk indicates that a one standardized unit empathic increase results in a .19 increase in the standardized measure of perceived risk.

Empathy was also directly linked to AIDS problem recognition with a path coefficient of .14. The other direct path to AIDS problem recognition was from perceived risk of AIDS. Here the path coefficient was .22. Interest in science/medicine was not linked to either risk or problem recognition nor were any of the ability and opportunity variables.

AIDS information seeking was directly influenced by the perceived risk of AIDS (path = .13), AIDS problem recognition (path = .13), personal involvement with AIDS (path = .23) and interest in science/medicine (path = .19). AIDS information processing had two direct influences, one from AIDS problem recognition (path = .11) and one from AIDS information seeking (path = .49).

Our measure of information processing ability, education, was the only path leading to AIDS familiarity. Here the path coefficient was .16. Education also had a direct path to AIDS understanding (path = .37) as did AIDS familiarity (path = .37).

Finally, our primary dependent variable, AIDS acceptance, had four direct paths. One of the motivational variables, empathy, linked directly to acceptance with a path coefficient of .22. AIDS information seeking was also directly linked to acceptance with a path coefficient of .21. Both knowledge concepts influenced AIDS acceptance. The path between AIDS familiarity and AIDS acceptance was .26 while the path from AIDS understanding to acceptance was .12.

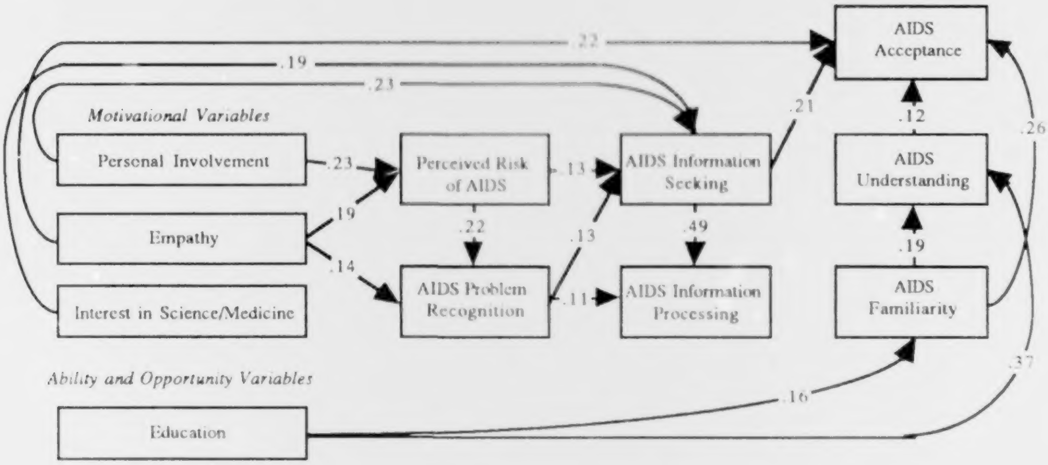

Figure 2: Revised Model After Delection of Non-significant Paths

One of the advantages of path analysis is the way the influence of one variable can be broken down into direct and indirect paths. In Figure 2, you can see that empathy has two routes of influence on AIDS problem recognition. It can influence it through its direct path (.14) or it can exert an influence from its path to perceived risk of AIDS (path = .19) which then influences AIDS problem recognition directly (path = .19). This second route of influence is known as an indirect path. In Table 1 (page 8), we present our analysis of the direct and indirect influences of the predetermined variables on the dependent variables.

Of the motivational variables used in this study, empathy emerges as the most consistent influence. It has significant direct effects with perceived risk (.1878), AIDS problem recognition (.1382), and AIDS acceptance (.2121). In terms of indirect effects, empathy influences AIDS problem recognition (.0478) through the path to perceived risk; it influences information seeking through both risk and problem recognition (.0468); it influences information processing (.0417) through risk, problem recognition, and information seeking; and it has a negligible indirect effect (.0099) on acceptance through risk, problem recognition, and information seeking.

Personal involvement also shows widespread influences on the variables in the model. It has significant direct effects on perceived risk (.2285) and AIDS information seeking (.2290). Personal involvement has indirect effects to problem recognition (.0496) through perceived risk, to information seeking (.0351) through perceived risk and problem recognition, to information processing (.0223) through perceived risk, problem recognition, and information seeking, and in a very small way, (.0074) to AIDS acceptance.

Our third motivational concept, interest in science/medicine, has one direct effect, to AIDS information seeking (.1950). Interest in science/medicine has an indirect influence on information processing (.0947) through information seeking and an indirect influence on AIDS acceptance (.0414) through information seeking.

Education, our measure of message processing ability, has direct effects on AIDS familiarity (.1644) and on AIDS understanding (.3746). Education has an indirect impact on AIDS understanding through familiarity (.0320) and an indirect influence on AIDS acceptance (.0466), this time through familiarity and understanding.

Our measures of perceived risk and problem recognition also had fairly widespread influences. Perceived risk had direct effects on AIDS problem recognition (.2175) and on AIDS information seeking (.1252). Its indirect effects are on information seeking (.0283) through problem recognition and it has an indirect effect on information processing (.1046) through problem recognition and information seeking. Its indirect effect on AIDS acceptance was (.0326) through AIDS problem recognition and AIDS information seeking.

Problem recognition had direct effects on information seeking (.1302) and information processing (.1059). It also had indirect effects on information processing (.0632) through information seeking and on AIDS acceptance (.0276) through information seeking.

AIDS information seeking had a direct effect on AIDS acceptance (.2121) and no additional direct or indirect effects. AIDS information processing was not a significant influence on AIDS familiarity, as hypothesized in the original model.

AIDS familiarity had direct effects on AIDS understanding (.1946) and AIDS acceptance (.2595). Its indirect effect on AIDS acceptance (.0238) was through AIDS understanding. AIDS understanding had a direct effect on AIDS acceptance (.1224).

Table 1

Interpretations of Effects in a Model of the Acceptance of People Infected with AIDS:
Sample from Rural Illinois, March 3-7, 1991

Dependent Variable	Predetermined Variable	Total Effect	Indirect Effect	Direct Effect
Perceived Risk	Personal Involvement	.2285		.2285
	Empathy	.1878		.1878
Aids Problem Recognition	Personal Involvement	.0496	.0496	
	Empathy	.1790	.0478	.1382
	Perceived Risk	.2175		.2175
AIDS Information Seeking	Personal Involvement	.2641	.0351	.2290
	Empathy	.0468	.0468	
	Interest in Science/Medicine	.1950		.1950
	Perceived Risk	.1535	.0283	.1252
	AIDS Problem Recognition	.1302		.1302
AIDS Information Processing	Personal Involvement	.0223	.0223	
	Empathy	.0417	.0417	
	Interest in Science/Medicine	.0947	.0947	
	Perceived Risk	.1046	.1046	
	AIDS Problem Recognition	.1691	.0632	.1059
	AIDS Information Seeking	.4855		.4855
AIDS Familiarity	Education	.1644		.1644
AIDS Understanding	Education	.4066	.0320	.3746
	AIDS Familiarity	.1946		.1946
AIDS Acceptance	Personal Involvement	.0074	.0074	
	Empathy	.2250	.0099	.2151
	Interest in Science/Medicine	.0414	.0414	
	Perceived Risk	.0326	.0326	
	AIDS Problem Recognition	.0276	.0276	
	AIDS Information Seeking	.2121		.2121
	Education	.0466	.0466	
	AIDS Familiarity	.2833	.0238	.2595
	AIDS Understanding	.1224		.1224

The Missing Paths

Two sets of paths that did not appear in the final model raise some interesting questions regarding the media's role in the process of recognizing AIDS as a problem, in processing AIDS information, and in learning about AIDS.

None of our variables dealing with incidental media use--not television, not newspapers, not magazines--had any significant effect on any of the endogenous variables in the model. Possible reasons for this failure are apparent. First, it is quite possible that people already recognized AIDS as a community problem and that the impact of the media on the process of recognition is cumulative, developing over an extended time period. It is conceivable that incidental exposure to messages about AIDS, over a long period of time, has already made people aware of the seriousness of AIDS.

A similar interpretation for the failure of incidental media use to influence AIDS information processing can be advanced. The way we operationalized information processing, as the recall of receiving information about AIDS through a variety of channels within the last month, might have been tapping the responses of an information saturated public, at least from the public's perspective. Looking at the descriptive statistics on some of our measures, 56.1% of our respondents indicated getting magazine information about AIDS "sometimes" or "often." The corresponding percentages for newspaper stories, public service announcements on TV, and television programs were, respectively, 65.3%, 77.6%, and 63.1%. There was not much variability there to explain.

AIDS familiarity, which dealt with basic knowledge of AIDS transmission, was also seemingly uninfluenced by incidental media use. Here, it is quite possible that using general media use as a measure of opportunity to receive AIDS relevant information was using too broad a measure. It might have been better to rely on media use that maximizes the possibility of encountering AIDS related information. For magazines, this would include the reading of news magazines and health magazines. For television, this could include the watching of network news and, perhaps, the viewing of television talk shows such as those hosted by Phil Donohue and Oprah Winfrey.

Finally, the failure of AIDS information seeking to be linked directly to AIDS familiarity or AIDS understanding was surprising. In reviewing some of the possible reasons for this, we found that many of our variables were near the maximum in terms of expressed information seeking. For instance, 72.1% of the people in our sample said that they had carefully read several newspaper articles about AIDS. Special TV programs about AIDS were watched by 58.2% of the sample, 77.0% indicated they had seen a television drama about someone with AIDS, and 63.4% indicated that they had carefully read several magazine articles about AIDS.

The only information seeking questions about AIDS where the responses were at about 50% or less involved the questions about asking a friend or family member about AIDS (32.5%), reading the Surgeon General's AIDS information pamphlet (49.5%), and reading any literature passed out by employer, insurer, church, or other group (51.1%). These three measures, which constitute the non-mass media channels for AIDS related information, appear to be more selectively used or less generally available than mass media channels.

Another possible problem deals with our measure of AIDS familiarity. Our sample appears to be near the ceiling for this type of knowledge. The data strongly suggest that people know the process of AIDS transmission. When asked if you can catch AIDS by working alongside someone with AIDS, 92.9% of our sample said, "No." The negative responses for eating food prepared by someone with AIDS, being sneezed on by someone with AIDS, and using a restroom used by someone with AIDS were 80.6%, 76.2%, and 79.2% respectively. Only for the question about catching AIDS from a dental worker was there evidence that our sample was somewhat unsure of the answer (61.2% indicate it was true, 19.9% indicated it was false, and 17.5% were not sure).

The Identified Paths

While the missing paths suggest some new conceptualization about the role of mediated messages, particularly incidental media use, the evidence also points to fairly strong and potentially important media influences. First, information seeking is influenced by the appropriate predictor variables (personal involvement, interest in science/medicine, perceived risk of AIDS, and AIDS problem recognition) and is itself an important influence on AIDS acceptance (direct path = .21). This suggests that directed information seeking, which itself can increase because of increased feelings of risk or increased concern about AIDS as a problem, leads people to think about AIDS and the people infected by the disease (to use Petty and Cacioppo's terms, to "elaborate on the message") and to come to a recognition that people with the AIDS virus should be accepted as we would accept anyone with a serious illness.

It is also encouraging to see that information about AIDS, as measured by AIDS familiarity and AIDS understanding, positively influences AIDS acceptance. Perhaps even more importantly, AIDS familiarity, the type of knowledge most easily learned by the community, has a stronger total effect on AIDS acceptance (.2833) than AIDS understanding (.1224).

Finally, the role of empathy as a predictor is of major importance. It is directly related to increasing people's risk estimates, in helping them to recognize AIDS as a serious problem, and in accepting people infected with AIDS. It is also a factor, indirectly, in stimulating information seeking. This has important message design implications, suggesting that messages might attempt to elicit these feelings of empathy in the audience.

Conclusion

The revised model is a reasonable fit to the original theoretical presentation. Motivational variables, as suggested in the elaboration likelihood model (Petty & Cacioppo, 1986), were important determinants of either perceptions of risk or problem recognition (involvement) and of information seeking, as predicted by Grunig and Childers (1988). Our ability measure, education, was linked particularly to the depth of processing component (Grunig & Childers, 1988) which we had labeled "AIDS understanding." Here the total effect for education was .4066, the second highest total effect found in the model. Its linkage to the breadth of processing component (again, from Grunig & Childers, 1988) was significant (.1644).

Support for Grunig and Childers (1988) suggestion of linkages between perceived risk and problem recognition on AIDS information seeking and on AIDS information processing was also found. Perceived risk influenced problem recognition and information seeking while problem recognition was directly tied to information processing.

Finally, even though AIDS information seeking and AIDS information processing did not effect AIDS familiarity or AIDS understanding, information seeking was an important influence on AIDS acceptance (path = .21), our primary variable of interest.

Our findings have important policy implications. If the mass media are going to be useful tools in fighting the third AIDS epidemic, then it appears that they are going to have to operate in part by tapping people's empathic feelings toward people with AIDS. Media message creators might be advised to portray people with AIDS as regular people--people with families, friends, jobs, responsibilities and problems. Such portrayals would allow the identification necessary for an empathic response. The majority of people in our sample indicated their concern for people with AIDS even though relatively few had any direct experience with people infected with AIDS. Message creators might also tap people's natural interest in science and medical news to encourage more information seeking about AIDS.

It also appears that people are generally well informed about processes related to AIDS transmission. Lower level knowledge is seemingly a more important influence on AIDS acceptance than the in-depth knowledge we also measured. People need to know but they need not be experts.

AIDS is a health and social problem that will not go away soon, if ever. Its long term consequences for individuals, their families, their communities, their countries, and their world are just beginning to be estimated. Media will play an important role in determining how individuals, communities, nations, and the world respond to the people living with AIDS. As media scholars and professionals, it is up to us to continue to learn as much as possible about how we can assist in this effort. This paper joins a number of others in continuing the process.

Notes

1 We have elected to substitute the term "AIDS" rather than using "HIV/AIDS." When we refer to the "AIDS virus," we are referring to HIV. While this is less technically correct, it does correspond to what the average person seems to know about HIV/AIDS. That is, they know that AIDS is caused by a virus (74.3% of our sample identified a virus as the cause of AIDS) but they could not tell us either what HIV stood for or that it was what caused AIDS (only 24.9% responded correctly to a question regarding the meaning of "HIV").

2 The Pearsonian zero-order intercorrelations for the exogenous variables are presented in Appendix A while the zero-order intercorrelations for the exogenous and endogenous variables are presented in Appendix B.

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Appendix A

Pearsonian Zero-Order Intercorrelations
Exogenous Variables[1]

	Empathy	Interest in Science	Education	Incidental Media Use		
				NP	TV	Mag
Motivational						
Personal Involvement	**.09**	.08	.08	.03	.00	**.12**
Empathy		.05	.05	-.01	**.13**	**.09**
Interest In Science/Medicine			**.24**	**.14**	-.03	**.11**
Ability and Opportunity Influences						
Education				**.11**	**-.15**	**.19**
Newspaper Exposure					.03	**.18**
Television Exposure						.08

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[1] **Boldfaced** entries are significant at the $p \leq .05$ significance level, one-tailed test. Ns for the entire table ranged from 344 to 365.

Appendix B

Pearsonian Zero-Order Intercorrelations
Exogenous and Endogenous Variables[1]

	Perceived Risk	Problem Recog	Information Seeking	Information Process	Famili-arity	Under-standing	Accept-ance
Exogenous Variables							
Motivational							
Personal Involvement	**.25**	**.10**	**.30**	**.20**	.07	**.09**	**.15**
Empathy	**.21**	**.19**	**.18**	**.10**	.05	**.09**	**.27**
Interest In Science/Medicine	.04	.09	**.25**	**.18**	**.11**	**.14**	.07
Ability and Opportunity Influences							
Education	.03	.06	**.17**	.05	**.16**	.41	.10
Newspaper Exposure	.01	.02	**.18**	**.11**	.05	.04	.06
Television Exposure	-.07	.01	-.03	-.06	.02	-.09	.01
Magazine Exposure	.04	.07	**.25**	.07	**.14**	**.16**	**.12**
Endoogenous Variables							
Perceived Risk and Problem Recognition							
Perceived Risk to Others		**.25**	**.24**	**.18**	**.09**	**.16**	**.12**
Problem Recognition			**.20**	**.21**	.07	.08	**.10**
Information Processing and Seeking							
Information Seeking				**.51**	**.21**	**.21**	**.31**
Information Processing					**.11**	**.11**	**.24**
Cognitive Variables							
AIDS Familiarity						**.29**	**.32**
AIDS Understanding							**.24**

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[1] **Boldfaced** entries are significant at the $p \leq .05$ significance level, one-tailed test. Ns for the entire table ranged from 336 to 366.

Between Facts and Values:
Print Media Coverage of the Greenhouse Effect, 1987-1990

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Abstract

Between Facts and Values:
Print Media Coverage of the Greenhouse Effect, 1987-1990

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Using as a baseline Herbert Gans' work on values in the news, this qualitative study of the print media coverage of the greenhouse effect between 1987 and 1990 asserts there are at least three additional values that help frame news of the greenhouse effect: progress, the institutionalization of knowledge, and innocence. These values replicate in some crucial ways of the values of the scientific community doing research on the greenhouse effect. However, the impact of these values tends to de-emphasize a view of the future and the role of ethical value choices in covering this story, both essential to public understanding of the issue.

Introduction

When historians examine the Twentieth Century, they will find that much of western culture's intellectual effort has been devoted to examining the deep meaning of science. As it evolved in the Eighteenth and Nineteenth centuries, science became closely linked with an Enlightenment vision of truth. Science was tied specifically to that which could be investigated by the senses. It was rational, verifiable, and capable of being replicated. This scientific world view permeated everything from new ideas in management (Merkle 1980) to government (Nesbit 1973). For example, the Progressive movement owes much to the notion that better government was government that had been rationalized and systematized. Science, at least in intellectual circles, was viewed as a neutral analytic tool.

It was this same passion for neutral "facts" that, in a critical sense, provided the philosophical underpinnings of objective journalism. Science and objective journalism shared a common world view and needed to be seen as rising above political, social and economic concerns (Schudson 1987; Dickson 1984).

However, the rise of pragmatism has fundamentally undermined these notions. Pragmatists propose that knowledge and reality are not **fixed by** but instead are **the result of** an evolving stream of consciousness and learning. Pragmatists question the neutrality of the scientific method and world view. Indeed, contemporary philosophy of science suggests that science, far from being value neutral, is the expression of particular sets of values (LaTour 1987). Contemporary discussion of risk communication reflects much of this value-related debate (Gregory 1991; Slovic, Fischhoff and Lichtenstein 1985).

While the shift from an Enlightenment view of truth to pragmatism has been well documented in the philosophical literature, work on other fields that adopted similar paradigms, including mass communication, has been much more scant. Gans (1979) in his pioneering study of values in the news provides a baseline attempt to link the question of epistemology with some important journalistic practices. But, Gans' effort has stood almost alone for the past decade.

This paper is an effort to expand on Gans' work. It asserts that media coverage of one story that straddles the realm of politics and science--the greenhouse effect--reveals some additional values in the news. The term values is used here in the same way that philosophers use the term: something that is intrinsically worthwhile in and of itself. A system of values is generally a cultural or professional construction (Weiskel 1990). Values help journalists determine what to cover and, more subtly, how to frame their accounts.

Further, media coverage of the greenhouse story also reveals how the subtle philosophical debate between a "scientific" world view and a more pragmatic one works itself out in a news story that refuses to remain "strictly" science. It is to two versions of the greenhouse story, one "scientific" and the other pragmatic, that the paper now turns.

The Greenhouse Effect: A Problem of Values Cloaked in Science

What follows is a summary of the current scientific explanation of the greenhouse effect and the surrounding scientific controversy.

The greenhouse effect is arguably the best accepted theory is climatology. In its simplest terms, the greenhouse effect describes how gases in the atmosphere trap heat from the earth's surface that would otherwise escape into space. These trapped gases warm the planet, making life on earth possible. In the total absence of the greenhouse effect, the mean temperature of the earth would be about 33 degrees centigrade colder, rendering the earth, like Mars, uninhabitable. Humanity has always lived in a greenhouse.

What has made the greenhouse effect scientifically contentious is that the amount of warming it provides has not been historically stable. In previous geologic eras, the age of the dinosaurs for example, some greenhouse gases were more plentiful and the earth was apparently warmer. The reverse of this relationship existed during the ice ages.

Current scientific debate centers on whether the greenhouse itself is heating up again. Humanity's impact on global warming appears to date to the industrial revolution, and most scientists believe our contribution to global warming since that time has been between .5 and .7 degrees centigrade. Studies indicate the rate of warming may be increasing. The five most common greenhouse gases, carbon dioxide, tropospheric ozone methane, nitrous oxide and chloroflourocarbons are either exclusively linked with human industrial development (CFC's) or with an expanding human population that must be fed (methane and nitrous oxide) and fueled (carbon dioxide and tropospheric ozone). Scientists believe that global warming is an interactive phenomenon--the hole in the ozone and acid rain have synergistic impact on the problem, (for more detail, see Leggett 1990).

However, social scientists and philosophers suggest the foregoing explanation omits some important analytic tools--tools that are rooted in social policy and ethical values.

. To begin with, the greenhouse effect is not a scientific phenomenon in the same way that the combination of two atoms of hydrogen and one atom of oxygen producing water is believed to be. While the greenhouse effect itself is based in the physics and chemistry of the atmosphere and oceans, its probable acceleration represents political and economic choices. Humanity values feeding itself, an increasing standard of living (for both the developed and developing world), and longer life expectancies. These choices, which are not based in science but instead in philosophy (human life is valuable, we should preserve and extend it) and social policy, (for example, encouraging industrial-type production in developing countries), appear to have had a profound impact on the physical world. In a significant sense, it is these choices about what to value that has provided the blue print for the greenhouse humanity currently inhabits.

Scientific explanations of the problem tend to frame the issue in "science" driven terms, rather than suggesting that political policy and human choices are the base of the physical phenomenon. With this rather central omission, it becomes possible to seek solutions to the greenhouse effect in the "neutral" realm of science and to make public policy choices subservient to the "scientific findings." However, social scientists and philosophers have argued that the reverse approach, making value choices in the form of political and social policy as a mitigation strategy and building scientific models on those choices, makes equally as much sense (Jamieson, 1990).

This vision, a value-centered view of the greenhouse effect, is seldom articulated in the scientific literature on the subject. However, even some well respected researchers agree that decision making about the greenhouse effect has as much to do with politics and values as it does with the science of atmospheric chemistry.

> Finally, there is an ethical question associated with the atmospheric problems we have discussed here. Do we have the right to commit future generations to unprecedented atmospherical perturbations without actively attempting to prevent, impede, or at least anticipate them...Perhaps even more important is the need for public awareness and understanding, which could lead to demands for political action (Schneider 1989, pp. 284-285).

Since scientists have served as one of the major sources for popular information about the greenhouse effect, it is reasonable to suggest that the scientific view rather than the value-driven one has permeated mediated messages. Defining the values in media coverage of the greenhouse thus becomes important, for if mediated messages about the greenhouse emphasize certain values while de-emphasizing others, that emphasis may help frame public perceptions of the issues in important ways (McCombs and Shaw 1972; Rogers and Dearing 1988).

The Method

This study is a qualitative analysis (with quantitative work where appropriate) of coverage of the greenhouse effect in the print media between 1987 and 1990.

Stories using the key words "greenhouse effect" and "global warming" were obtained from five publications in the Nexus data base: The New York Times, the Washington Post, the Los Angeles Times, Time magazine and the Associated Press. These media outlets were selected because they represented the elite press, a general circulation magazine well known for its science coverage, and a wire service which provides news copy to the majority of print and some broadcast outlets in the United States. The story served as the individual unit of analysis, although some of the analysis required that specific words be noted in individual news accounts.

A team of three coders pre-tested the coding instrument for six weeks and then coded the individual stories. The intercoder reliability rate achieved was about 85 percent, although some items in the content analysis for example, the number of sources cited, scored much higher.

When the Associated Press ran more than one story about a particular event, the longer (longest) of those stories was the only story coded. Stories which mentioned the greenhouse effect only tangentially, for example sports stories, gardening stories, and book reviews, were culled. Of these about 2,000 stories in the original data set, about 1,441 were eventually coded.

Coding categories included the media outlet, the month and year the story was produced, whether the stories were news, feature or opinion, the number and type of sources cited, the news peg, the amount of coverage devoted to the greenhouse in each story, the metaphors used, whether the story discussed the future, and how politics was treated in each piece. For many, but not a majority of news and feature stories, the beat of the reporter who authored the story was determined.

However, while the content analysis has empirical elements, that traditional empiricism is not the focus of this paper. Rather, this paper seeks to take those empirical findings and link them to philosophical foundations of the greenhouse coverage. Those foundations are a world view that can sometimes be counted, for example, the number of stories focusing on a specific event which in turn reflects a view of progress and the role of a scientific elite, and sometimes cannot, for example a connection between the environment and innocence which is seldom articulated in stories but is clearly implied. This study seeks to prod numerical data into a form that speaks broadly about mass communication, not just media coverage of one story.

It is also important to place the study in a context, for other scholarly research supports much of the findings about media coverage of the greenhouse.

Media Coverage of Science

In the past ten years, there has been a substantial body of scholarly work produced on media coverage of science. These studies have included both print and television, have focused on discrete events, such as hurricane warnings (Ledingham and Walters 1985, 1989) floods, (Gruenfest, 1987) and other disasters, and have ranged broadly over a variety of issues, including risk communication. They have been compiled by scholars in a variety of disciplines, including political science, sociology and mass communication. There are significant trends evident in the studies.

Most scholars agree that classic definitions of news dominate how science is reported in the mass media. Science coverage tends to emphasize "firsts in science" (Nelkin 1987), is tied to discrete events, and emphasizes an elite group of scientists (Friedman, Dunwoody and Rogers 1986; Hilgartner, 1990). Coverage of certain events, for example disasters, is stripped of social, economic and political context (Wilkins 1987). How science is conducted, the process of scientific discovery, also is missing from the vast majority of news accounts (Nelkin 1987).

The definition of news itself tends to frame stories about risk in terms of specific people, governments or corporations to "blame" rather than more deeply examining the political and economic system which makes decisions about risk (Shilts, 1987). Psychologists have labeled this tendency to personalize rather than systematize the "fundamental attribution error". Mass communication scholars have applied the concept to news coverage, (Wilkins and Patterson 1987; Stocking 1989).

Narrative analysis of news also demonstrates some important trends. Network television has been found to produce predictable narratives (Nimmo and Combs 1985; Patterson 1989). The focus on discovery itself, a common news peg in science stories, also has narrative implications (Franklin 1986). The process of discovery becomes a dramatic story to tell, and the scientist who makes the discovery a protagonist of sometimes heroic proportions (Nelkin 1987; Logan 1991). Most scholars also agree that scientists have "used" the news media to further their own agendas, whether they be the securing of additional research dollars, the more subtle promotion of "science as objective and neutral" (Nelkin 1987; Dickson 1984), or the popularization of certain aspects of science, such as medicine (Logan 1991).

On the most abstract level, coverage of environmental risks has been linked anecdotally with the process of symbol formation.

> We have found that the media tend to dramatize but do not reconstruct a risk communication. They highlight the existing uncertainties, dissonances, and conflicts. The media are a great equalizer of perspective on risk...The media also play an important role in fixing images ...that determine how risk information will be processed (Krimsky and Plough 1988: 302).

Symbols reflect and refract societal value choices.

> The question of acceptable standards or risk is part of the question of acceptable standards or morality and decency, and there no way of talking seriously about the first while evading the task of analyzing the cultural system in which the second take their form (Krimsky and Plough 1988: 305).

Most of the foregoing studies have analyzed media coverage of science according to the standards of science itself. Coverage which is accurate according to the standards of the scientific community has been praised. Little effort has been made to link the coverage itself with an underlying value system that spans both mass communication and science. However, to paraphrase sociologist and risk communication scholar Mary Douglas, it does the scholarly community little good to analyze coverage without analyzing the cultural and philosophical system that allows news stories to take a particular form. It is to this effort that this paper now turns.

The Values in Greenhouse Coverage

A review of the numerical coding for the greenhouse stories emphasizes some important trends.

First, the issue itself received more coverage (in terms of the total number of stories) each year. In 1987, for example, only 73 greenhouse stories were carried. In 1988, the coverage jumped to 285, in 1989, 463, and in 1990, 574. While this pattern indicates that the "greenhouse effect" or "global warming" received more mention in news columns, it is important to note that the greenhouse was a major focus of only 17.8 percent of all news stories and that it was mentioned causally or only as part of a list in 47 percent of the print coverage. However, the number of stories focusing on the greenhouse effect or devoting substantial attention to the problem also increased every year.

There was also a distinct coverage pattern within each year. The number of greenhouse stories rose with the atmospheric temperature: more than 50 percent of all greenhouse stories appeared in April through August.

While the weather may be considered a general precipitating greenhouse event, there were others. In fact, more than 51 percent of the greenhouse stories were connected with specific political events, for example the passage of the Clean Air Act, budget debates in Congress and the White House, and the signing of various international treaties and accords. An additional 18 percent of the stories were linked with a specific environmental event, including hot summer weather, while only 9 percent of the stories were tied to a specific scientific event such as the release of a study.

It was impossible to determine the "beat" of the reporters covering the greenhouse story in about 63 percent of the stories. However, about 6 percent of the greenhouse stories were bylined by either by a science or environmental writer. When science writers covered the story, they tended to focus on a "first" in science or the release of a new scientific report, for example studies about the impact of methane or the latest scientific surveys of the ozone layer at both the north and south poles. Science writers used the term "greenhouse effect" as the appropriate label for the problem. Stories with a scientific emphasis also were sourced heavily in the scientific community.

When political reporters or general assignment writers covered the story, there were some significant changes. Events still dominated coverage, but the greenhouse became part of a list of problems--particularly in budget stories. Further, the term greenhouse effect was not used as often to describe the problem. Non-science writers preferred the label "global warming". This group of stories also was dominated by official sources, although they represented government and interests groups rather than the scientific community.

This skeletal outline of the greenhouse story reveals three important underlying values in the news.

Tying the story to specific events, particularly "firsts" within the scientific community, emphasized the importance of progress. The fact that the process of science remained largely underreported (as has been noted by other scholars) reinforced the emphasis on discovery and progress. In fact, science did not make the news agenda about the greenhouse unless there was progress or a study finding to report. That view equates progress with a steady, upward, linear motion as contrasted to a more cyclic, Hegelian view.

American cultural historians have long noted that progress is a central focus of the American psyche. The greenhouse coverage indicates that, at least on some stories, it can be an essential element of news. Progress is rooted in a history of conquering the next frontier. Indeed, the work of science is often described as a "frontier", and accounts of the latest scientific discoveries about the greenhouse also had this flavor.

Political accounts, particularly those linked with the election campaign or the passage of certain sorts of legislation, for example the Clean Air Act, reflected the same view. The greenhouse was a problem a rational political system could meet.

Ways of meeting that rational challenge often focused on debates about technology, in both news and opinion pieces. News and opinion pieces asserted it would be possible to mitigate the greenhouse effect through the development of more efficient systems of burning things. For example more efficient car engines, increased use of nuclear energy, legislation to restrict certain sorts of emissions or to spur research and development. Progress, in these stories, was often linked to a technological fix (Ellul 1964), and to a technocratic elite that would first develop and then control the solutions.

This emphasis on elites revealed a second underlying value: the institutionalization of knowledge. This view was sometimes stated but much more often implied--through sourcing patterns and news peg selection--that knowledge about the greenhouse was housed almost exclusively in the scientific and governmental communities (industry received a secondary focus).

The greenhouse effect was a story dominated by the scientific community in 1987 and 1988. In those years, the top sources for greenhouse stories were scientists. However, in 1989 and 1990 the balance shifted. Government officials were the top source cited in 1989 and 1990. The second most frequently cited source was those people identified as representing interest groups while scientists came in a distant third. In stories written by science writers, scientists served as the top two sources the majority of the time. In stories written by non-science writers, government officials, scientists, and representatives of special interest groups (from environmentalists to auto manufacturers) dominated. News pegs reflected a similar emphasis. In fact, the majority of stories were pegged to a political event; scientific discovery received much less emphasis in every year but 1987. News value--the capacity to "make" news--was definitely lodged in institutions or those who represented them.

When the "facts" of the greenhouse were questioned at all, they were questioned through the use of the dueling scientist scenario. One example from Time magazine's 1989 coverage of the issue illustrates the trend. In a 425-word story on February 6, 1989, that reminded readers of the magazine's announcement of earth as the planet of the year the month before, those who questioned the greenhouse theory were given almost equal weight with those who supported it, even though the division in the scientific community is quite uneven.

> Is the earth warming up or not? Many scientists say it is, thanks to the greenhouse effect...Last week, the naysayers appeared to pick up a bit of ammunition in the continuing debate. A study by the National Oceanic and Atmospheric Administration...shows that the climate in the 48 contiguous states of the U.S. has remained pretty much unchanged for nearly a century...At first glance, the study would appear to be a serious blow to the greenhouse theory. Not so. The U.S. makes up only 1.5 percent of the earth's surface...

Social scientists were almost never (less than 2 percent) quoted as "experts", even though they could have added much to the debate. This was particularly true of the set of stories that focused around the White House conference on global warming--a conference which the Bush administration admittedly wanted to "spin" as "progress". Political figures who did not want to take policy action about the greenhouse said that since the scientific community disagreed, progress would equal more scientific research. These stories emphasized the willingness of social policy makers to defer to the institutionalization of knowledge as defined by the scientific community. Seldom was anyone portrayed as willing to engage in debate about the "facts" as defined by science, despite the desire by many policy makers for more action, not more research.

Scholars of risk communication have noted much the same phenomenon in risk assessment, where experts analyze risk in a much different way than members of the public. Expert rationality has been contrasted with lay rationality in risk studies. Under the impetus of scholars such as Slovic, Douglas and Wildavsky and Krimsky and Plough, the risk management community has begun to acknowledge that "lay rationality," because it considers such concepts as fairness and dread which do not have mathematical equivalents, has a genuine place in the establishment of public risk policy.

However, this acknowledgment of the non-expert is almost absent in news stories about the greenhouse effect. One had to be in a position of power, be it scientific or political, to have a voice in the legitimate news coverage surrounding the greenhouse debate. Knowledge is institutionalized in the sense that it becomes the property of those working for the "institutions" of science or government rather than something that is capable of being democratically shared within and without institutions. In coverage of the greenhouse, at least through 1990, there is no equivalent of "lay rationality". Knowledge became news only in the hands of certain experts.

Lay rationality in greenhouse coverage, instead, was confined to the opinion pages. About 20 percent of the total number of greenhouse stories were opinion pieces, many of them letters to the editor from "average" people. They were often lively, intelligent and spoke much more directly about the value questions surrounding the greenhouse--distribution of resources, impact on the developing world, where money is most appropriately spent, and the ethical implications of various political policies and technology choices. Many opinion pieces were signed by those who said they represented various interest groups--from automobile manufacturers to foresters to environmental groups. And, in a few cases, scientists also took to the opinion columns to debate some of the scientific reasoning behind greenhouse choices. But whether the source was the "average" person or a more vested interest, letters to the editor provided a clear indication that people were thinking about the values implicit in greenhouse choices. Those same issues were almost never raised in straight news and feature accounts.

Third, the news portrayed the greenhouse effect largely as an environmental problem, and stories focusing on the environmental aspect of the issue emphasized another value: innocence.

Innocence is a word that almost never appeared in greenhouse coverage. Instead, it was referred to obliquely. For example, a lengthy Washington Post story noted:

> We've had a lot of different Mother Natures in America. The Puritans saw her as a howling witch. The settlers of Virginia saw her as fertile Lady Bountiful, begging to be seduced. Landscape painters of the 19th century gave us a Mother Nature as sublime and transcendent as Athena, bearer of power and wisdom. Inventors and scientists saw her as a guardian of secrets. Walt Disney gave us a coy, dimpled fairy godmother who sent bluebirds to us with a picnic basket if we got lost in the woods.

One of the few exceptions was a June 12, 1989, Time magazine story that ran in the entertainment section of the book. Time noted, "Hollywood's zeal mirrors an explosion in environmental activism throughout the world. Stories about the burning rain forest, global warming and the Exxon Valdez spill have left people feeling a loss of ecological innocence."

The fact that the concept arose in a popular culture as opposed to hard news context is informative. Science and scientists don't grapple with innocence; they seek facts. It takes artists and popularizers of various sorts to put those facts in a cultural frame.

Scholars whose work it has been to meld cultural frames with intellectual traditions (for example, see R. W. B. Lewis 1955; H. N. Smith

1951) have emphasized that innocence arises when a culture finds itself unwilling to link itself with an historical past. The "scientific" explanation of the greenhouse effect, the one that relies on atmospheric chemistry without reference to the human interaction that has influenced it, plays nicely into this view of innocence. The fact that the greenhouse story was often played as an attempt at progressive discoveries also supported this view.

An innocent can acquire facts; to shape them, and to take responsibility for the choices that produce them, requires knowledge and experience, something that the totality of the greenhouse coverage only hinted at. Very few greenhouse stories emphasized the value choices that have accelerated global warming. A somewhat larger, but still quite small number of stories, did mention that values would influence how the country would deal with the greenhouse problems. But, values were almost never portrayed as equal in impact to the science on the question.

The emphasis on progress, and America's ability to link progress with optimism, also reinforced innocence as a subtle factor determining the news. Many in the scientific community (Leggett 1990) assert that global warming entails some difficult policy decisions. But that view, when it was quoted at all in news accounts, was a minority stance. The overwhelming implication was the optimistic view that technology would somehow "fix" this problem. One example of a technological fix that made the news was a Reuters story reprinted in the Los Angeles Times on August 25, 1989. A Swiss scientist, in a Nature article, had suggested that a satellite carrying aluminum mirrors would be positioned at a point in space 900,000 miles from Earth, where it would cast a permanent shadow on the planet. This giant parasol was reported as a potential solution to the problem. Such a technological approach, one that was repeated again and again in news accounts, deprived values of any real role in mitigating the greenhouse effect.

Americans, in their literature and art, have solved problems by changing the world around them, not by changing themselves. In a European context, such a view would be described as a cultural unwillingness to exchange innocence for knowledge (experience).

The greenhouse coverage reflected this same unwillingness. The environment was something pristine to be preserved, another historic American view which has substantial contemporary support in public opinion polls about the environment (Kempton 1990). But, news accounts sometimes implied and often stated that preservation would be accomplished through the application of technology, not by making value choices that would somehow alter how people behaved. Technology was portrayed as value neutral; knowledge of how people could change themselves to influence events was seldom explored. Americans themselves would remain largely unchanged by this debate, and American innocence would be maintained.

The greenhouse stories also reflected some of Gans' values in the news. Greenhouse stories were remarkably ethnocentric. For a problem that was defined as global warming, the solutions often were framed in an almost exclusively American context. About 53 percent of the stories did not define the problem as a global one; only 22 percent mentioned any international actions. This ethnocentrism meant that the greenhouse effect's impact on the developing world, among the most serious outlined in a majority of scientific scenarios, was seldom mentioned. American policy makers appeared to confront ethnocentric choices, not choices that would have distinct implications for most of the inhabitants of the planet.

The value of leadership, of both the scientific and political communities, also was present in the greenhouse coverage. It was revealed in sourcing patterns, news pegs or the overall portrayal of politics within the stories as well as through the institutionalization of knowledge. Individualism also dominated many accounts. This emphasis included stories on particular environmentalists or what individual people could do. Individualism also dominated opinion pieces, particularly letters to the editor.

In short, media coverage of the greenhouse effect reflected Gans' earlier work. However, other values also were reflected in those stories, and by their presence, they also raise some important questions about how journalists do their work.

The News: Between Facts and Values

Englishman David Dickson (1984) in his study of the politics of science has highlighted what he calls the "value gulf" between the laboratory and society.

The values of the laboratory, tied as they are to the neutral scientific method, emphasize the collection of facts and the collection of power in institutions and technology.

The values of society are much more amorphous. Like lay rationality, they include such concept as fairness and dread as well as skepticism about the increasingly powerful (and money hungry) role science is playing in contemporary society.

Dickson links the scientific agenda ever more closely with the research agendas first of government and second of private industry. He notes that even such bastions of scientific neutrality such as the National Science Foundation have not remained immune from these trends.

> These tended to exhibit a constantly shifting balance between, on the one hand, an apparently genuine desire to respond to pressures to make science 'socially responsible,' and on the other, a concern that these pressures should not significantly challenge the control either of the practice of science by the scientific community or of its applications by private corporations (Dickson 1984: 227).

Mass communication, or at least news coverage of the greenhouse issue, seems to be suffering from a similar values gap. As science and environmental writing has become more professionalized and specialized over the past 20 years (see Friedman, Dunwoody and Rogers 1986), the goals and aims of science writers have become more closely tied to the goals and aims of the scientists they cover. Mass communication scholars have aided this transition, for they have studied the accuracy of news reports of science against the standards of science itself. Science writing has become a specialized beat, one reporters cling to but which they also are reluctant to stray from for fear of losing their "expertise" with their editors and possibly their readers and viewers (Wilkins 1990).

Much of the past research on science coverage has established the "scientific" version of the truth as the standard for which journalists should aim. Journalists, in turn, have been comfortable with this critique because it is deeply imbedded in an Enlightenment concept of truth that supports notions of contemporary journalistic objectivity.

But, as both pragmatism and social science would indicate, the scientific standard is perhaps not the only standard by which journalist performance should be evaluated. Whether journalists are willing to acknowledge it or not, they base their work in certain values, and those values permeate news accounts. The values of progress, of the institutionalization of knowledge, and of innocence all support the dominant paradigm--one which is derived in part from the scientific standard. Link these values with those already outlined by Gans, and a dominant frame of reference for many news accounts, and certainly the majority of news accounts about the greenhouse effect, emerges. This dominant frame serves the scientific, economic and governmental communities well, for it supports continuing research and a type of public policy which emphasizes changing the technological environment rather than the human one. However, this particular framing of the problem and the news may not be as salutary for the general population of the planet, which must live and survive in the greenhouse century.

If journalists are to begin to cover the greenhouse story through an agenda that is truly developed within the journalistic, as opposed to the scientific, profession, then they must first acknowledge the values that help to define and report the news. For example, the greenhouse effect can be covered in terms of social, as well as hard, science. It could and should focus on the future. It should be possible to cover social scientists, philosophers and citizens studying the issue, and to report their lay version of the reality of the choices the greenhouse provides humanity as news.

Gans concluded his book with a call for multiperspective news. That is a beginning, but as this study indicates, the concept of multiperspective needs to include differing epistomologies. There are some stories, for example the lowest temperature at which superconductivity can occur, which may be appropriately measured by Enlightenment objectivity. But the greenhouse effect, and many other stories that mix science and politics, are not appropriately evaluated by such a standard. Journalists need to develop an alternative vision--one that does not necessarily stem from scientific values. Different values need to be recognized, acknowledged, and finally, reported. Without such an effort, the story itself will remain incomplete, an inadequate response from a profession facing the greenhouse century.

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KNOWLEDGE GAP EFFECTS: AUDIENCE AND MEDIA FACTORS IN ALCOHOL-RELATED HEALTH COMMUNICATIONS

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KNOWLEDGE GAP EFFECTS: AUDIENCE AND MEDIA FACTORS IN ALCOHOL-RELATED HEALTH COMMUNICATIONS

The American public has been the target of a flurry of recent public communication activities dealing with dangers of drinking alcohol. This study examines the role of demographic and lifestyle factors in people's search for, awareness of and rentention of media messages dealing with risks related to drinking alcohol.

The knowledge gap hypothesis, introduced into the mass communications literature in 1970 by Tichenor, Donohue, and Olien, continues to have important implications for public health campaigns. As originally formulated by Tichenor, Donohue, and Olien (1970), the hypothesis asserts that "as the infusion of mass media information into a social system increases, segments of the population with higher socioeconomic status tend to acquire this information at a faster rate than the lower status segments" (Tichenor, Donohue, and Olien, 1970: 159-160).

Ettema and Kline (1977) have suggested that the knowledge gap may be due to deficiency in information-processing rather than SES. In fact, Douglas, Westley and Chaffee (1970) have shown an inverse relationship between education and knowledge level. In addition, Genova and Greenberg (1979) have shown that interest and knowledge are correlated, thus introducing motivation to seek information as an important factor related to knowledge gap among people.

Lovrich and Pierce (1984) compared the effects of situation-specific variables--five motivation measures dealing with water type and consumption--and transsituational variables--such as education, income and occupational status--on knowledge level. Results showed that situation-specific factors can indeed contribute to widening of the

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knowledge gap. Ettema, Brown, and Luepker (1983) also showed that interest in cardiovascular information played a greater role than education in narrowing the knowledge gap.

In addition to cross-situational and situation-specific factors, knowledge gap has been linked to the notion of "ceiling effect." This is a condition when audiences feel they have learned enough about a subject and they are not willing to process further information about that subject (Donohue, Tichenor, and Olien, 1975; Chaffee and McLeod, 1973; Genova and Greenberg, 1979). Or, as Ettema and Kline (1977) pointed out, a knowledge gap may indeed never occur when the domain of knowledge is very limited and relatively simple (Katzman, 1974; and Larson and Hill, 1954).

Ettema and Kline (1977) have identified the following post-hoc explanations for knowledge gap: Motivation to seek information; the level of existing knowledge; level of relevant social contact; exposure and retention of information; differential impact of print and broadcast media, and communication skills.

This study will examine the relationships between demographic and lifestyle characteristics and the underlying components of knowledge gap theory--as related to public campaigns about the risks of alcohol--which include: (1) Alcohol-related information-seeking behavior; (2) level of existing knowledge about the dangers of alcohol, and (3) recall of alcohol-related issues from mass media and alcohol warning signs posted at the point of sale.

Traditional transsituational factors such as education, ethnicity, along with age and sex, will be considered. In addition, situation-specific lifestyle factors such as alcohol consumption and tendency to drink hard liquor will be examined, assuming that these people are more likely to seek and hold information about alcohol.

The notion of "need for information" (See Atkinson, 1964; Baumgarner, 1978; Burnkrant, 1976; Tolman, 1951) has been given a central role in the study of human information-seeking behavior. More specifically, in the area of health communications, it has been suggested that information search is motivated by recognition of a health problem and perceived importance (Crawford, 1974) and may result in recall of such health-related information (Ettema, Brown and Lupeker, 1983).

Past research has related the need for health information to some of the demographic characteristics. For example, it has been suggested that blacks (Roebuck and Quan, 1976; Snow, 1977) and Mexican-Americans (Galvin and Fan, 1975; Madsen, 1973; Moustafa and Weiss, 1968) display fewer instances of preventive health behavior, consulting physicians only late in their illness. It also has been asserted that members of ethnic minorities (Zuccollo and Liddell, 1985) are less likely to retain health-related information. Welch, Comer, and Steinman (1973), however, have suggested that such behavioral differences are partly due to education. Evidence also exists that retention of health-related information may be due to higher education levels (Baumgarner, 1978).

On the other hand, the "ceiling effect" (Donohue, Tichenor, and Olien, 1975; Chaffee and McLeod, 1973; Genova and Greenberg, 1979) implies that the more educated people, being familiar with the risks related to alcohol consumption, may have less need for such information.

The differential impact of print and broadcast media also have been related to knowledge gap phenonmena (Tichenor, Donohue, and Olien, 1970). In fact, it has been shown that newspaper reading is associated with higher cognitive activities (Robinson, 1976; Robinson and Zukin, 1976; and Robinson, 1977). Fry (1979) has suggested that television exposure will manifest a smaller knowledge gap due to education than will exposure to newspaper. Glover, Plake, and Zimmer (1982), Jacoby, Craik, and Begg (1979) suggested that higher cognitive tasks are related to higher rate of recall. Miyo (1983) found, controlling for education, that newspaper readers will retain knowledge better than when viewing television. Miyo (1983) also suggested that this difference is due to the fact that newspaper readers process information at a deeper cognitive level and thus demonstrate better rates of recall.

Based on the above discussion, the three following sets of hypotheses will be tested:

1. Information-Seeking Behavior:

People with higher levels of education are more likely to:

1.1 Feel less need about alcohol-related information.

1.2 Be familiar with more sources of health information.

Members of ethnic and racial minorities are less likely to:

1.3 Feel they have enough alcohol-related information.

1.4 Be familiar with more sources of alcohol-related information.

The heavy-drinkers of alcohol, especially those who usually drink hard liquor, are more likely to:

1.5 Feel more need about alcohol-related information.

1.6 Be familiar with more sources of health information.

2. Existing knowledge about hazards of alcohol:

People with higher levels of education are more likely

to:

2.1 Know about health problems related to alcohol.

2.2 Know the permissible level of blood alcohol for driving.

2.3 Know the penalty for drunk driving.

Members of ethnic and racial minorities are less likely

to:

2.4 Know about health problems related to alcohol.

2.5 Know the permissible level of blood alcohol for driving.

2.6 Know the penalty for drunk driving.

The heavy-drinkers of alcohol, especially those who

usually drink hard liquor are more likely to:

2.7 Know about health problems related to alcohol.

2.8 Know the permissible level of blood alcohol for driving.

2.9 Know the penalty for drunk driving.

3. Retention of information from media:

People with higher levels of education are more likely

to:

3.1 Retain health information from print media.

Members of ethnic and racial minorities are less likely

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to:

3.2 Retain health information from print and broadcast media.

The heavy-drinkers of alcohol, especially those who
usually drink hard liquor, are more likely to:

3.3 Retain health information from print and broadcast media.

Method

The present study focused on alcohol-related information as a salient aspect of health-risk communication. This study followed a period of heavy media coverage of alcohol-related issues. Orange County provided a suitable context for such a study for a number of reasons: (1) Just prior to the present study, it became the first county in the United States to require the posting of health-warning signs to be placed in all licensed acholic beverage outlets; (2) variety of media available; (3) the salience of alcohol-related issues in media because of pending national, state and local legislation; (4) diversity of population and (5) salience of issues concerning change of legal blood alcohol limit from .1 to .8 in California.

Sample

The present study used data from a telephone survey[1] of a random sample[2] of 450 residents of Orange County, California, conducted in July and August of 1989. Forty percent of the sample was male, and 60 percent female. Respondents ranged in age from 16 years to 90 years, with the median and mean ages being 35 years and 39.3 years, respectively.

The sample consisted of 82 percent white, 8.5 percent Hispanic, 3.5 percent black, and 6 percent Asian.

Measures

Information-Seeking Behavior. Two dimensions of information-seeking behavior were examined in the present study. These were:

Familiarity with Sources. Respondents were asked to list sources where they might typically obtain alcohol-related information from. The number of sources used indicated the degree of familiarity.

Perceived Need for Information. This was operationalized as to the extent the respondents needed alcohol-related information on a four-step scale: (1) Very little; (2) Some; (3) Quite a bit, and (4) A lot.

Retention of Alcohol-Related Issues from Media. This was a set of four questions for each medium (newspaper, magazine, television and radio). Respondent who had paid attention to an alcohol-related issue or a public service announcement covered by that medium were asked to specifically state what they remembered. Responses were checked against an inventory--collected by the research team--of alcohol-related issues, public service announcements, and stories that had been conveyed by media during the months of April, May, June, July and August 1989 for verification. The total of messages correctly recalled in each medium constituted the recall score for the particular medium.

Retention of Alcohol-Related Warning Signs Posted at the Point of Sale. Respondents who had paid attention to a warning sign--posted at a point of sale--were asked to specifically state what they remembered. Responses were checked against the actual content of the signs. The content dealt with "liver cancer" or "pregnancy." If the

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respondent was right, he/she received a score of "1" indicating retention, otherwise the respondent received "0" indicating lack of retention.

Demographics. This included measures about **gender** (1-male and 2-female), **age** (number of years), **ethnicity** (a dichotomous measure of 1-white Anglos and 2-non-Anglos, such as Asian, black, Hispanic), and **education** (number of years of schooling).

Alcohol Consumption Behavior. The number of alcoholic drinks consumed in a typical week was used as the level of alcohol consumption.

Tendency to Drink Hard Liquor. This dichotomous measure identified those respondents who indicated that they do not drink hard liquor as compared to others (1-non-hard liquor drinkers and 2-hard liquor drinkers).

Existing Knowledge. Respondents were asked three questions relating to: (1) Awareness about health problems related to alcohol. The number of health problems that the respondents could list was used as their measure of knowledge about health problems related to alcohol. (2) Awareness of the permissible blood-alcohol level under the new law. Those respondents who responded correctly were recorded as having knowledge as compared to those who did not provide the precise percentage (1-having knowledge of blood-alcohol level and 2-lack of knowledge of blood-alcohol level). (3) Awareness of the penalty for drunk driving. Those who mentioned consequences related to newly enforced restict policies were considered as having knowledge of drunk-driving penalty (1) a opposed to did not mention such consequences (2).

Findings

In accordance with previous studies, our results show that younger people tend to consume more alcohol (Pearson $r=-.17$, $p<.001$, $N=433$). Women in our sample tend to be somewhat older (Pearson $r=-.13$, $p<.005$, $N=424$), less likely to drink hard liquor (Pearson $r=.12$, $P<.01$, $N=427$) and tend to consume less alcohol (Pearson $r=.20$, $P<.001$, $N=440$).

In accordance with other studies, members of racial and ethnic minorities in our sample tend to be younger than the rest of our sample (Pearson $r=-.10$, $p<.02$, $N=423$). These people do not show a different pattern of drinking compared with others (See Table 1). The educated members of our sample are more likely to be white-Anglos (Pearson $r= -.11$ $p<.002$, $N=423$) and tend to consume more alcohol (Pearson $r=.09$, $P<.05$, $N=437$). In short, young and educated males of Orange County tend to be among the heavy drinkers of alcohol.

The first hypothesis dealt with the effects of demographic and lifestyle factors on information-seeking behavior. The two components of this measure--need for information and familiarity with sources of information--were each regressed on the four demographic variables (ethnicity, sex, education, ager) and two lifestyle variables (alcohol use and tendency to use hard liquor). Table 2 shows that the more education one has, he or she feels less need for alcohol-related information (beta= $-.17$, $p<.001$), providing support for our hypothesis 1.1.

In addition, those with more years of education have more familiarity with alcohol-related information (beta= $.16$, $p<.001$), lending support for our hypothesis 1.2.

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As it was expected, non-Anglos believe they have less need for alcohol-related information than Anglos (beta= -.11, p<.05), which supports our hypothesis 1.3.

Though no difference exists between male and females in their perceived need for information, females appear less familiar with sources of alcohol-related information than males (beta= -.16, p<.01).

Our hypothesis 1.5, dealing with the relationship between drinking alcohol and need for more information about alcohol, was not supported. Though alcohol use and use of hard liquor did not prove to be significant predictors of need for alcohol-related information, those who use hard liquor appear to have greater familiarity with alcohol-related information sources--such as doctors, health centers, hospitals, army bases etc.(beta= .10, p<.05), supporting our hypothesis 1.6.

In order to examine the impact of demographic and lifestyle factors on knowledge about dangers of alcohol, three regression analyses (See Table 3) were performed. Knowledge of alcohol-related diseases, legal limits of blood-alcohol levels and the penalty for drunk driving were used as dependent variables. Ethnicity, sex, education, age, alcohol use and the tendency to use hard liquor were used as independent variables in each analysis.

The more educated tend to have more knowledge of alcohol-related health problems (beta= .15, p<.01), giving support for our hypothesis 2.1. Education is not, however, linked to the two other measures of knowledge dealing with legal blood-alcohol limit and penalty for drunk driving, thus rejecting hypotheses 2.2 and 2.3.

Non-Anglos appear to have less knowledge about alcohol-related diseases than

Anglos (beta= -.18, $p<.001$), supporting our hypothesis 2.4. But, ethnicity seems to be unrelated to the two other knowledge measures, providing no support for hypotheses 2.5 and 2.6.

Female respondents in the present study possessed less knowledge about alcohol-related diseases (beta= -.10, $p<.05$). However, they were more knowledgeable about the legal blood-alcohol limit for driving than males (beta=.16, $p<.05$).

Older respondents also appear to have less knowledge about alcohol-related diseases (beta= -.10, $p<.05$) and just what the legal blood-alcohol level is (beta= -.14, $p<.01$). Amount of alcohol use and use of hard liquor do not appear to be significant predictors of knowledge about the hazards of alcohol use, not supporting our hypotheses 2.7, 2.8, and 2.9.

The final set of hypotheses examined the impact of demographic and lifestyle factors on recall of alcohol-related issues from television, newspapers, magazines and radio (See Table 4). Results show support for our hypothesis 3.1 in that education is positively related to retention of alcohol-related information from the print media (newspapers, beta= .14, $p<.01$; magazines, beta= .11, $p<.05$). Members of ethnic minorities did not demonstrate any difference in the recall of alcohol-related issues from media compared to Anglos, rejecting our hypothesis 3.2.

Older individuals also appear to recall more information about alcohol-related issues from newspapers (beta= .11, $p<.05$). As a matter of fact, the older population is less likely to recall information from broadcast media (television, beta= -.12, $p<.05$); radio, beta= -.12, $p<.05$) than younger people. Surprisingly, those who consume more

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alcohol and those who usually drink hard liquor do not necessarily recall more alcohol-related issues from the mass media, therefore rejecting our hypothesis 3.3.

In addition, recall of alcohol-related warnings seem to resemble that of radio in one respect and that of print in another. Younger (Beta=-.11, $p<.05$) and more educated people (beta=.16, $p<.001$) were more likely to recall the content of warning signs correctly. This finding is particularly significant since this group tends to have a higher potential for alcohol-related problems. It must be emphasized that the warning signs had been posted just before this study was conducted.

Discussion

Generally speaking, our results indicate that both situation-specific--motivational--and cross-situational factors--demographics--account for a small portion of variance on information-seeking behavior, existing knowledge, aquisition of knowledge from the mass media, and specific warning signs posted at the point of sale. These results, however, indicate that cognitive and communicative processes may have a much greater impact on knowledge-gap measures than previously had been suggested.

The level of education--a prime indicator of socio-economic status--is linked to less need for information about alcohol. Apparently, the more educated feels less need for alcohol information. The educated people, despite their lack of their perceived need for alcohol information, tend to be more familiar with sources of such information. In this particular case, it appears that motivation is operating in the opposite direction of our theoretical prediction. Educated people may simply consult more sources of information because of their superior information-seeking skills as opposed to motivation to learn about alcohol.

In addition to their greater use of information sources, educated people--again despite their lack of perceived need--hold more existing knowledge about health risks related to alcohol and again the gap seems to be contrary to our theoretical explanation which suggests a linkage between motivation to learn and the level of knowledge.

Members of ethnic and racial minorities seem to feel less need for knowledge, while they possess less information about health risks of alcohol compared to white Anglos. The existence of this knowledge gap may be partly due to information-processing skills of non-Anglos, since most health information is in English. Thus, communication skills may play a more important part in aquiring and retaining knowledge than previously assumed. Fatalism and lack of need for health information may be an additional explanation for this gap (Salber and MacMahon, 1961; Bergen and Olsen, 1963; Clarke, MacPherson, and Holmes, 1982), especially since health information about alcohol tends to be threatening.

But, the members of ethnic and racial minorities seem to be as familiar with driving regulations concerning alcohol consumption as other members of the society. This could be due to the ceiling effect (Donohue, Tichenor, and Olien, 1975; Chaffee and McLeod, 1973; Genova and Greenberg, 1979). Learning about the legal limit of blood alcohol and the penalty for drunk driving is relatively simple to learn and limited in scope. Members of ethnic and racial minorities, many of whom may be newcomers who try to avoid any encounters with police, are more motivated to learn these simple facts. Most Anglos, on the other hand, have reached their true ceiling. That is to say, most of them are familiar with the legal limit of blood alcohol and the penalty for drunk driving.

In the context of alcohol-related knowledge, gender seem to be a factor which have not been fully considered. Women seem to be familiar with fewer sources where they can obtain information about alcohol and appear to be less knowledgeable about the health risks of alcohol than their male counterpart. One reason may be that alcohol-related problems have not been traditionally related to women, therefore women might be less motivated to seek and process such information. In addition, most health-related campaigns about alcohol have targeted males, thus providing women with less exposure and information about alcohol.

Women, however, are more aware of the legal blood-alcohol limit for driving than men. This may suggest a more responsible driving behavior on the part of women and may also partially explain the fact that women are less frequently involved in drunk driving situations as compared with men. Although we find no significant gender differences in recall of alcohol-related information from radio and print media, women tend to remember less information from television than men which may be due to targeting of such programs toward males and women's lack of existing knowledge as was discussed earlier.

Controlling for other factors, age seems to be a relevant characteristic in explaining knowledge-gap phenomena. Older people tend to feel less need for alcohol-related information, are familiar with fewer sources of information, and possess less knowledge about the dangers of alcohol in general. These findings are surprising since older people are expected to be more interested in their health and thus should be more motivated to seek and hold information than younger people.

Examining the media implications of the knowledge gap hypothesis, print media--both magazine and newspaper--seem to be effective communication channel among the more educated. This is in line with previous findings (Miyo, 1983) that television is a "leveler" whereas print may be linked to a knowledge gap among people with various levels of education.

Our findings show there is a differential impact for broadcast versus print media among various age groups. Older people tend to retain less information from television and more from newspapers as compared to younger people. One reason may be that television and radio programs dealing with dangers of alcohol specifically target younger people. Newspapers, on the other hand, tend to provide more specific information (Benton and Frazier, 1976) and require a higher level of cognitive activity (Robinson, 1976; Robinson and Zukin, 1976; Robinson, 1977) which have been shown to be conducive to greater recall (Glover, Plake, and Zimmer, 1982; Jacoby, Craik, and Begg, 1979).

Following Lovrich and Pierce (1984), we used alcohol consumption and type of alcohol as measures of involvement and interest in alcohol-related information. These situation- specific factors were not powerful predictors of knowledge gap as shown in previous research.

Those individuals who usually drink hard liquor are more likely to be familiar with sources of alcohol information. As previously discussed, these sources of information included doctors, hospital, health and counseling centers. Surprisingly, these group and the heavy drinkers do not perceive the need nor possess more information in relation to other members of our sample. This lack of relationship may indicate that consumption level and the type of alcohol may not be ideal indicators of motivation levels for learning about the dangers of alcohol. It is reasonable to assume that if these people were aware of the risks related to drinking alcohol, they would discontinue its use. It was most interesting to observe the differential impact of warning signs on different groups of people.

Both age and education, independently, made a difference in retention of warning sign messages. Younger people and more educated people were more likely to recall the content of warning signs correctly. Other factors, including those who consume more acohol and hard liquor did not affect their knowledge. This is another indicator of the importance of both communicative skills and exposure to message which have strong implications for knowledge gap.

The results generally support the notion that when information in environment is increasing, different qroups acquire different amount of such information. Comparing these findings with the previous research, however, suggest that acquisition of information may be a function of topic, media, personal attributes of the receiver as well as their particular situations. In short, the same demographic and motivational characteristics may not impact knowledge gap in all situations.

Despite the lack of measurement of knowledge at multiple points, it is fair to say that this research adequately taps the amount of knowledge acquired by people as a result of infusion of new knowldege in the environment. It provides an assessment of people's learning of new driving regulations, rentention of specific and verified information from the media and retention of the content of alcohol warning signs to which the respondents had not been previously exposed.

TABLE 1
Intercorrelation Matrix for Demographic and Lifestyle Variables

	Sex	Age	Ethnic	Education	Hrd Liquor	Consumpt
Sex	1	-.13** N=424	-.02 N=422	.00 N=428	.12** N=427	.20*** N=440
Age		1	-.10* N=423	.04 N=426	.05 N=421	-1.7*** N=433
Ethnic			1	-.11* N=423	-.02 N=418	-.05 N=431
Education				1	.05 N=424	.09 N=437

TABLE 2

Multiple regression analysis: Examining the effects of transsituational and situational factors on alcohol-related information-seeking behavior

Regression Model	Perceived Need for Information	Awareness of Sources of Information
Transsituational and Situational Factors Combined		
R2 (F Statistics)	.05 ** (3.3)	.07*** (4.4)
Ethnic	-.11*	-.05
Female	-.09	-.16**
Education	-.17***	.16***
Age	-.13**	-.12*
Alcohol Use	-.01	-.01
Use of Hard Liquor	-.00	.10*
N	387	369

NOTE: Listwise deletion is the convention used for missing information, hence each analysis is based upon different numbers of cases. *= >p< .05; **= p<.01; ***= p<.001

TABLE 3
Multiple Regression Analysis: Examining the effects of transsituational and situational factors on knowledge about hazards of alcohol

Regression Model	Health	Legal Blood Drunk Driving	Penalty Limits
Transsituational and Situational Factors Combined			
R2 (F Statistics)	.07*** (5.0)	.06*** (3.9)	.03(1.9)
Ethnic	-.18***	-.05	-.05
Female	-.10*	.16**	.06
Education	.15**	.02	-.02
Age	-.10*	-.14**	-.09
Alcohol Use	-.03	.04	.09
Use of Hard Liquor	.03	-.02	.03
N	400	401	391

TABLE 4
Multiple regression analysis: Examining the effects of transsituational and situational factors on recall of alcohol-related issues from media

Regression Model	TV	Newspapers	Magazines	Radio	Warning Signs
Transsituational and Situational Factors Combined					
R2	.03	.02*	.02	.03*	.06
(F Statistics)	(1.8)	(2.1)	(1.4)	(2.3)	(4.0)
Ethnic	-.02	.04	.01	-.00	-.08
Female	-.12*	.06	-.05	.02	-.05
Education	.02	.14**	.11*	.09	.16**
Age	-.12*	.11*	-.09	-.12*	-.11*
Alcohol Use	.05	-.01	.01	.09	.08
Use of Hard Liquor	-.00	-.02	-.00	-.03	-.00
N	394	396	393	390	395

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NOTES

1. Interviews were conducted by senior and graduate students at Cal State Fullerton.

2. A systematic random sample was drawn from Pacific Bell's white pages from north and central Orange County and Orange Coast south. The procedures were as follows: (1) All pages of non-residential phone numbers, i.e. customer guide, government pages, yellow pages were excluded; (2) the residential pages were evenly divided among five members of the research team; (3) each member of the group started from the 88th page of his/her section; (4) five numbers were selected from every eighth page. To include the unlisted numbers, five was added to every number; (5) in every selected page, the three listings from the top left-hand corner were skipped; (6) if the selected listing was a business or other non-resident listing, the first residential listing in Orange County was selected. It must be noted that all the above numbers were randomly selected.

The Smoking and Health Issue in the Daily Press:
Influence of the Regional Economy, the Tobacco Institute,
and the Objectivity Routine

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Abstract

This study examines three important factors affecting coverage of smoking and health in the daily press: the extent of tobacco's contribution to the regional economy, public relations efforts by the Tobacco Institute, and the objectivity routine of newswork. Modest differences were found in headline slant and in use of tobacco industry sources in key smoking-related stories between tobacco and non-tobacco regions. Stories reveal how the Tobacco Institute exploits the routine requirement for the "other side," but the standardizing influence of news routines largely overrides regional economic differences.

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Kevin Swisher is completing his Master's degree in the Department of Journalism, where Stephen Reese is an associate professor. The authors gratefully acknowledge the assistance of Gale Wiley of the Department of Journalism in obtaining news articles from the VU/TEXT data base system.

On January 11, 1964, Surgeon General Luther Terry confirmed what doctors and scientists had known for years: smoking was a primary cause of lung cancer and was strongly linked to emphysema and heart disease (Whelan, 1984).

Since that time, thousands of studies have only strengthened the case against cigarettes. Smoking accounts for 83% of all lung cancer cases, and has been causally linked to cancers of the kidney, pancreas, and esophagus (American Cancer Society, 1990a, 1990b). Government estimates place the annual smoking-related death toll in the United States at 390,000—or more than one in six deaths from all causes (American Cancer Society, 1990a). Such figures prompted former Surgeon General C. Everett Koop to label smoking "the chief, single avoidable cause of death in our society and the most important public health issue of our time" (Davis, 1987, p. 725).

Nevertheless, 49 million Americans continue to smoke (American Cancer Society, 1990a), and millions more have only a superficial understanding of the health risks involved (Bagdikian, 1983; Warner, 1985). Given this state of affairs, many have accused the mass media of shirking their responsibility to communicate smoking risks. Bagdikian (1983), for example, has argued that:

> For years up to the present, medical evidence on tobacco and disease has been treated differently from any other information on carriers of disease that do not advertise. The print and broadcast media might make page 1 drama of a junior researcher's paper about a rare disease. But if it involved the 300,000 annual deaths from tobacco-related disease, the media either do not report it or they report it as a controversial item subject to rebuttal by the tobacco industry (p. 172).

Media Coverage of Smoking

Certainly media coverage of smoking has fallen far short of that which would be expected on a public health threat of its magnitude. Why is that? A full understanding requires accounting for the various forces inside and outside media institutions that shape smoking coverage, including news routines, public relations efforts, and economic forces (such as advertisers or the local economy). For smoking, as for other issues, these influences are related. Public relations workers exploit news routines, for example, while local economic pressures affect media organizations' susceptibility to the influence of powerful advertisers and public relations efforts. (See Shoemaker and Reese, 1991, for a systematic review of these influences.)

The possibility of regional economic influence on smoking coverage is quite probable, given the colossal size of the industry and the number of states it spans. To search for such influence, it may be helpful to look at the daily press, and compare how newspapers differ based on the extent of tobacco contribution to the regional economy. In the past, typical studies of economic influence on smoking coverage (Kessler, 1989; Minkler, Wallack, & Madden, 1987; Smith, 1978; Tye, 1990; Whelan, Sheridan, Meister, & Mosher, 1981) have taken a different tack, examining the effect of cigarette advertising on magazine content. But unlike the national magazines in those studies, daily newspapers are tied to specific localities, and comparing them allows us to shed light on another aspect of economic influence.

Other conditions call for an analysis of smoking coverage in the daily press as well. Newspapers are cited by the public as a major source of cancer information (Freimuth, Greenberg, DeWitt, & Romano, 1984). Additionally, of all media workers, newspaper journalists may be said to adhere most strictly to the objectivity "routine," which we might expect to buffer them from undue tobacco industry influence. On the other hand, this adherence may make newspapers susceptible to a more subtle form of influence, one of special interest to us. That is, the tobacco lobby often succeeds in promoting its views as "the other side" of the "debate," thus exploiting the objectivity routine in ways we will discuss more fully below.

This paper will examine regional economic influence on daily press smoking coverage through a textual analysis of stories and headlines, as well as a quantitative analysis of coverage compared across regions. Our approach is unique in three respects. First, we will examine the daily press, a medium neglected in this area of research but one of considerable importance. Second, we have chosen to study the effect of local economies, on the assumption that daily newspapers are vitally linked to their respective local economies for support and therefore have a vested interest in their region's economic health. (This is far from merely an academic concern. In the nation's tobacco-growing region, promoting the area's economic health would come at the expense of the region's public health.) And third, while past studies have focused on the absence of stories about smoking (on the assumption that prodigious cigarette advertising would inhibit magazines from relating the bad news about smoking), we have chosen to analyze smoking coverage as it exists, and pose the question, "What's it like?" We intend to compare smoking coverage across regions, and to document techniques used by the tobacco industry to shape smoking coverage. In so doing, we hope to refine the economic influence hypothesis and fill a void in the literature by illustrating how influence is possible beyond simple suppression of stories that run counter to tobacco interests.

Smoke and Mirrors: The Media & Smoking

Objectivity and the Ritual of Balance

Despite the conventional wisdom that objectivity is a quixotic goal, journalists nevertheless strive to appear neutral in all disputes. Tuchman (1977) has argued that following "objective" procedures serves a defensive purpose for media organizations. Reporters, seldom having the time or expertise to verify the truth, rely on an appearance of impartiality to fend off criticism. This "strategic ritual" of objectivity—as Tuchman calls it—becomes a routine, often manifested in balancing stories: as a defensive strategy, journalists dutifully report the claims of both sides of an issue, making little or no editorial comment on either.

Smoking coverage is no exception. As Neuberger (1963, p. 26) observed nearly 30 years ago, "Like the tail of a kite, no story about the risk of smoking goes anywhere without a tobacco industry rebuttal trailing along behind." Indeed, the strategy of balance can even carry over to the editorial page. In 1987, The New York Times ran a guest column on the dangers of passive smoking directly above an identical-length counter-editorial written by an employee of the Tobacco Institute, the lobbying and public relations arm of the tobacco industry ("Attack on 'Passive' Smoking").

Such blind adherence to the balance ritual has troubling implications for smoking coverage. While the case against smoking is ironclad, the tobacco industry "can cite no authority higher than their own propagandists and a shrinking handful of medical flat-earth men" (Owen, 1985, p. 48). Several scholars (Bagdikian, 1983; Whelan, 1984; Neuberger, 1963) have argued that the balance routine proves dysfunctional on the subject of smoking. Their concerns are summed up by broadcast journalist Howard K. Smith's critique of a TV program on smoking:

> To me that documentary was a casebook example of balance that drained a hot issue of its meaning. On that program there were doctors who had every reason to be objective, who maintained that cigarettes have a causal relation to cancer. On the other side, there were representatives of the tobacco industry, who have no reason to be objective, who stated persuasively the opposite. The public was left with a blurred impression that the truth lay between whereas, as far as I am concerned, we have everything but a signed confession from a cigarette that smoking has a causal relation to cancer (Bagdikian, 1983, p. 174).

Influence of Public Relations Efforts

Although evidence on the effect of public relations efforts on press coverage is mixed (Albritton & Manheim, 1983; Sachsman, 1976; Stocking, 1985; Tankard, Middleton, & Rimmer, 1979), interest groups on either side of the smoking issue still attempt to promote their views in the press. Public health advocates try to draw media attention to smoking risks while industry spokespeople dispute such findings. All too often, the tobacco industry comes out ahead in these public relations battles, as Owen notes:

> By calmly, steadfastly refusing to acknowledge that the sun rises in the east and sets in the west, the tobacco industry makes its critics seem shrill and hysterical and provides smokers with the morsel of doubt they need to rationalize continuing to consume. The transcendent achievement of the cigarette lobby has been to establish

> the cancer issue as a "controversy" or a "debate" rather than as the clear-cut scientific case that it is (1985, p. 49).

Notably, these public relations efforts help satisfy the requirements of the strategic ritual of balance. To create balance, journalists need opposing sources on any number of issues, preferably sources that are both quotable and accessible. Public relations workers are well aware of this need, and exploit the objectivity routine by being both highly quotable and highly accessible. The Tobacco Institute, for example, has advertised its toll-free number in journalism trade publications, encouraging reporters to call for "the other side" of smoking issues (Whelan, 1984).

Influence of the Regional Economy

The economic environment undoubtedly affects newspaper content as well. As businesses, newspapers are inextricably linked to the local economy; their two forms of financial support, advertising and issue sales, are largely functions of local economic health. For that reason, Molotch (1976) argues that a city newspaper must invariably promote growth. To do otherwise would run counter to the propertied interests of the city—which have growth as their overriding goal—and the newspaper. Moore (1985), for example, found such economic boosterism at work in Flint, Michigan, where The Flint Journal consistently put a positive spin on stories about the city's largest employer, General Motors.

How might this regional economic influence appear in stories? We have argued that such influence constitutes one part of the system of forces constantly shaping media content. Instead of acting directly on content, economic influence encourages favorable coverage by making newspapers more susceptible to pressures from other forces in the system. Thus, we expect that economic influence from a major regional industry makes papers within the region an easier mark for public relations efforts; those efforts, in turn, exploit the objectivity routine in a way favorable to commercial interests. The result? Coverage favors the major regional industry.

The nation's tobacco-growing region—primarily six states in the Southeast—would seem an ideal place to find such influence. As the region's primary cash crop, tobacco provides indirect economic support for all the newspapers in the region. More importantly, that cash crop is constantly under attack as a health threat. Consequently, papers in that region should be torn: a responsibility to their readers requires thorough coverage of the latest smoking risks, yet that coverage directly indicts a major local industry. This conflict should bring any regional economic influence into sharp relief.

Smoking Coverage in the Daily Press

Shifting our focus to smoking coverage itself, the first question we must ask is: What kind of smoking stories might best reveal influences on content?

Clearly, articles which impugn or threaten the tobacco industry would be fertile ground.

We chose three such areas to examine: (a) stories mentioning the Tobacco Institute, particularly those where the industry's public relations arm was cast in opposition to the American Cancer Society; (b) coverage of the American Cancer Society's annual Great American Smokeout in 1987 and 1988, when the Tobacco Institute promoted simultaneous counter-events to the Smokeout; and (c) coverage of David Burns, a scientist who, at the urging of the tobacco industry, was removed from an Environmental Protection Agency panel studying the hazards of "passive smoking," or inhaling others' cigarette smoke.

The Tobacco Institute.

Formed in 1958, the Tobacco Institute is a Washington-based trade group supported by 11 major cigarette companies (Zuckerman, 1990). Besides lobbying Congress on various tobacco-related issues, the Institute also serves as a public relations firm for the industry. From its inception, the Tobacco Institute has proposed to foster "public understanding of the smoking and health controversy" (Troyer & Markle, 1983, p. 97). Yet Troyer and Markle have noted that the Institute's approach has changed over the years:

> The old strategy of attacking the health claims against cigarettes has subsided. Institute spokespeople still insist that it has not been proved that cigarette smoking is a cause of disease, but they now emphasize the individual rights in the face of a repressive government (p. 101).

Moreover, the Tobacco Institute shifted in its first 20 years from a largely defensive role to a more offensive position in the media. Before 1969, the Tobacco Institute initiated only 19% of its claims in The New York Times; over the next nine years, the Institute initiated 71% of its assertions (Troyer & Markle, 1983). In addition, the Institute clearly exploits the routine of balance. Aside from positioning itself as the pre-eminent opposing source on issues of smoking and health (Whelan, 1984), the Tobacco Institute has gone so far as to write indignant letters to newspapers that fail to contact them for a rebuttal on smoking stories (Schlosser, 1988).

The Great American Smokeout.

Now in its 14th year, the American Cancer Society's Great American Smokeout is an annual public relations event encouraging smokers to quit for at least 24 hours. The largest health promotion event in the country, the Smokeout in November of 1990 had almost 19 million participants—38% of the nation's smokers (American Cancer Society, 1990c). To promote the Smokeout (held on the third Thursday in November), the American Cancer Society sends press releases to newspapers, and stages numerous lighthearted publicity stunts across the country.

But the event is anything but lighthearted to the tobacco industry. After all, the Smokeout reminds smokers that cigarettes are harmful. In recent years, the Tobacco Institute has become increasingly pro-active toward the Smokeout, seeking to mute its anti-smoking message. Two days before the Smokeout in 1987, the Institute took out full-page advertisements in seven newspapers to announce its "Great American Challenge": the Institute, asserting that cigarette smoke was not a major indoor pollutant, offered to pay to test the air quality in the American Cancer Society's non-smoking offices if the results could be publicized (Associated Press, 1987b). In 1988, again two days before the Smokeout, the Institute purchased 17 full-page newspaper ads to proclaim its "Great American Welcome"—a proposed network of restaurants and businesses that would welcome smokers (McGill, 1988).

The David Burns case.

Early in the summer of 1990, the Environmental Protection Agency finished its draft report on passive smoking. Their conclusion: involuntary exposure to cigarette smoke causes as many as 3,800 lung cancer deaths each year. In July, the EPA began selecting researchers for a 16-member panel to review the draft report. From the outset, the EPA enlisted Dr. David Burns, a scientist widely regarded as the nation's foremost expert on passive smoking (Acuña, 1990b; Johnson, 1989b). A recipient of the prestigious Surgeon General's medallion, Burns had reviewed numerous reports on smoking since the late 1970s and was senior editor of the Surgeon General's 1986 report on passive smoking. As a result of his research, Burns has become an outspoken opponent of cigarettes. In his own words, "It's no longer open to debate . . . this agent causes cancer" (Johnson, 1989a, p. b2).

Understandably no fan of Burns, the Tobacco Institute in August sent a letter to EPA administrator William Reilly protesting that Burns' "involvement with the anti-smoking movement" would prevent him from conducting a "reasonable" review of the report (Acuña, 1990a, p. b1). After a Virginia congressman also wrote protesting Burns' appointment, and after tobacco industry representatives visited Reilly "two or three times" to object, Burns was notified on October 18 that he was no longer on the EPA panel (Acuña, 1990a, p. b1). Burns took his case to the media, and the subsequent publicity resulted in Burns' reappointment to the panel a week later.

This case is interesting because, unlike the Great American Smokeout, it casts the Tobacco Institute in a reactive role—that is, the Institute must defend itself against accusations of undue influence. Additionally, the David Burns case involves high stakes—implications of jury-rigging and collusion—making coverage of the story even more susceptible to the forces discussed above.

Theory Applied to the Coverage

Applying the regional economic influence model to the chosen areas of smoking coverage, we would expect to find substantial differences in those stories when compared across regions. In the case of the Tobacco Institute, we would expect tobacco region papers to feature the Institute more prominently, and to more often include the Institute in stories involving the American Cancer Society—thus linking the two in readers' minds, and furthering the impression of the Institute as "the other side" of smoking issues. In the cases of David Burns and the Great American Smokeout, we would expect tobacco region newspapers to favor the industry view through the balance routine, purporting to "give both sides their fair say."

It should be noted here that we do not propose to establish whether economic influence does or does not exist—it does. In a capitalist system, the media are business entities whose survival depends on economic resources provided by the corporate sphere. Rather, we propose to examine whether economic influence—particularly from region to region—is powerful enough to override other influences that might tend to standardize content nationwide, such as the shared routines of newswork or the publicized health risks of smoking (which should not vary appreciably across regions).

Method

Six states produce a vast majority of the tobacco grown in the United States; in order of descending production, those states are North Carolina, Kentucky, South Carolina, Tennessee, Virginia, and Georgia (United States, 1989). For our purposes, all newspapers in those states were considered tobacco region papers. Although some cities in the region are more closely associated with the cigarette industry than others, economic influence would still be exerted on the state level, as tobacco is a major cash crop in each of those states.

The VU/TEXT[1] newspaper data base was searched for stories on David Burns and the 1987 Great American Smokeout. (1987 was chosen because it was the first year that the Tobacco Institute promoted a counter-event to the Smokeout.) Articles from two regional newspaper data bases—the West and the Southeast, which consisted primarily tobacco region papers—were analyzed for textual similarities and differences. (The West region was chosen for comparison because comparatively little tobacco is grown there.) For purposes of illustration, a few Great American Smokeout stories from 1988 were also examined.

The VU/TEXT system was also used to determine the number of stories each newspaper ran in 1988 containing the phrase, "Great American Smokeout," as well as the number of stories each paper ran containing both "Great American Smokeout" and "Great American Welcome." A similar search was performed on 1990 newspapers[2] using the terms "Tobacco Institute" and "American Cancer Society."

To control for newspaper size, tobacco region newspapers were matched with similar papers outside the tobacco region using both circulation and city population.[3] (This was done on the assumption that both circulation and population would positively correlate with news hole size.) These matched pairs of newspapers were then compared for the number of stories including the search terms.

Results

The David Burns Case

Differences in text.

By and large, newspapers communicated the David Burns case through five Associated Press (AP) stories. The first story, which ran in most papers on October 19, began this way (see Appendix for a full text):

> A strong lobbying effort by the tobacco industry and a friendly congressman has succeeded in removing a respected scientist from an Environmental Protection Agency panel on secondhand cigarette smoke.
>
> "I've never seen anything like this" in 12 years, said Steven Bayard, manager of the EPA project to assess passive smoking's health risks.
>
> "I'm disturbed about this," he said Thursday. "I think it was lousy. I think it shows undue pressure, personally, from the tobacco companies and from the Congress" (Raeburn, 1990c, p. a4, 1990k, p. a17).

The Los Angeles Times, one of the few papers to develop its own series on Burns' removal, framed the issue in much the same way:

> At the urging of the Tobacco Institute and a Virginia congressman, a nationally acclaimed scientist from UC San Diego has been removed from an Environmental Protection Agency panel reviewing the effects of secondhand cigarette smoke (Acuña, 1990a, p. 3).

Notably, both stories directly attribute the dismissal to the efforts of tobacco industry, and both describe Burns as highly regarded—which suggests an ulterior motive on the part of the tobacco industry. Both stories continue along similar lines, falling into the familiar balance ritual of charge and counter-charge. It should be noted, though, that both reporters attempted to provide the context for some claims, such as those of Rep. Thomas Bliley. "Bliley is a strong tobacco industry ally," noted Raeburn (1990k, p. a17). "Philip Morris is the largest private employer in his congressional district."

If regional economic influence was present, we would expect David Burns coverage to differ markedly in the Southeast. In particular, since this was a wire story, we would expect to find signs of systematic editing in the tobacco region papers—perhaps deleting "respected" before "scientist," or removing other material contrary to tobacco interests—all in the name of better balance.

Such was not the case. Most tobacco region papers ran the story unaltered, and where selective editing was suspected, it was never clear-cut. For instance, *The Charlotte Observer* deleted the third paragraph—in which Steven Bayard asserted "undue pressure ... from the tobacco companies"—and a sentence about Burns in the eighth paragraph that noted "Other researchers say his credentials are impeccable" (Raeburn, 1990h, p. 6a). And the *Richmond Times-Dispatch*, in recasting the lead to focus on their local representative, deleted the word "respected" before "scientist" and failed to causally link the dismissal to lobbying efforts: "A scientist opposed by a Virginia congressman, Rep. Thomas J. Bliley Jr., and the tobacco industry has been removed from an Environmental Protection Agency panel on secondhand cigarette smoke" (Raeburn, 1990g, p. b6).

Yet, in both cases, a preponderance of the story's negative assertions toward the tobacco industry remained unaltered. This pattern held true for other David Burns articles as well. For example, in the AP story relating Burns' reinstatement, *The Richmond News Leader* recast the story to focus on Bliley's disappointment over the decision, yet the story retained Raeburn's caveat in the third paragraph explaining Bliley's vested interest in the tobacco industry (Raeburn, 1990a, p. 16).

Differences in headlines.

Although regional economic influence was not reflected in differences in text (perhaps due to the constraints of wire stories, as we will address later), economic influence was suggested by notable differences in headlines across regions for identical AP stories (see Table 1). Particularly for the first David Burns AP story, headlines from tobacco region newspapers framed the issue in a way more favorable to tobacco interests than did non-region headlines. Intuitively, this makes sense in the case of wire stories: editors in the tobacco region might lack the time to systematically edit wire stories on smoking in response to economic influence, but they could slant the headlines on those stories to favor local industry.

Table 1 compares the headlines for the first AP story on Burns, and consists of every version of the story found using the Southeast and West regional VU/TEXT data bases. Interestingly, only two of five tobacco region headlines (Raeburn, 1990h, 1990m) directly attributed the dismissal to industry efforts. The *Lexington Herald-Leader*, for example, asserted only that Burns' removal was "linked to" lobbying efforts—a considerable understatement given the text of the AP story (Raeburn, 1990f). The *Greensboro News & Record* (Raeburn, 1990n) skirted the issue of causality as well, noting only that "tobacco lobbyists *triumph*" as an "'*anti-smoking*' expert" is removed [italics added].

By comparison, six of eight headlines in the non-tobacco region directly attributed the dismissal to industry efforts. Moreover, the language used in the non-tobacco region headlines generally favored the industry less than language used in the tobacco region: "passive smoking *expert*" (Raeburn, 1990e) versus "scientist *opposed by Bliley*" (Raeburn, 1990g), and "tobacco *lobby ousts* scientist"

(Raeburn, 1990l) versus "tobacco *backers get* scientist *taken off*" (Raeburn, 1990h) [italics added].

Thus, in the case of David Burns wire stories, headlines—the element most easily controlled by local editors—produced the most notable differences across regions, although the pro-tobacco slanting in the Southeast was not heavy-handed.

The Great American Smokeout

Coverage in the Southeast.

If the regional economy were to bias coverage of the Great American Smokeout in the Southeast, we could reasonably expect that bias to appear in several guises: scant or negative coverage of the Great American Smokeout, a soft-pedaling of the Smokeout's implicit health message, or, in 1987 and 1988, heightened coverage of the Tobacco Institute counter-events.

As above, the textual analysis revealed limited evidence of regional economic influence. Similar kinds of articles on the 1987 Smokeout were found both inside and outside the tobacco region: announcements of the Smokeout, how-to-quit stories, and wire stories on Smokeout publicity stunts. Selective editing was not apparent in the wire stories, nor were the headlines noticeably slanted.

Stories on the Tobacco Institute's "Great American Challenge" were infrequent in both regions, although the most favorable coverage toward the counter-event was found in *The Charlotte Observer* (Cleghorn, 1987), providing some support for economic influence. Still, that single story favorable to tobacco interests was more than counterbalanced by a pro-Smokeout wire story (Associated Press, 1987a) and two pro-Smokeout column installments (Robarchek, 1987; Van Buren, 1987) in the same day's paper.

A purely quantitative analysis, however, does suggest some regional economic influence on coverage of the Smokeout in 1988 (see Table 2). When controlled for size, tobacco region newspapers were collectively less likely to run stories mentioning the Great American Smokeout, featuring only 31 stories to the non-tobacco region's total of 38—a finding entirely consistent with the regional economic influence hypothesis.

The economic influence model would also predict a larger percentage of co-appearances between the Smokeout and the "Great American Welcome" in the tobacco states; that is, tobacco region newspapers would be more likely to oblige the tobacco industry and legitimize the "Great American Welcome" by linking it with the well-established Great American Smokeout. Although tobacco region papers were more likely to mention the "Great American Welcome" in tandem with the Smokeout (5 stories versus 2), and although those co-appearances represented a larger percentage of Smokeout stories in the tobacco region (16% versus 5%), a chi-square test revealed that the proportion of co-appearances did not differ significantly across regions (x^2 [1] = 2.22, N = 69). Thus, support for the hypothesis was mitigated.

Coverage nationwide.

Beyond modest regional differences, however, Smokeout coverage nationwide illustrates the influence of public relations efforts through the exploitation of news routines. Indeed, in 1987 and 1988, the countervailing efforts of the American Cancer Society and the Tobacco Institute can be seen as a veritable duel for media attention, each side attempting to manipulate news routines to their advantage. The American Cancer Society promoted the Smokeout with various photogenic kickoff events, like newborns wearing Smokeout T-shirts, or Mr. Potato Head relinquishing his pipe to Surgeon General Koop (exploiting the media's need for good visuals). The Tobacco Institute, on the other hand, promoted its own counter-events in the daily press and sought to portray the Smokeout as an attack on smokers.

Why? Because both tactics encouraged the strategic ritual of balance, which worked to the industry's advantage. Reporters seemed more than willing, for instance, to write a pro-Smokeout piece on children releasing balloons with anti-smoking messages attached. But, to the extent that the Institute successfully framed the Smokeout as a source of conflict, journalists quickly took cover behind the balance routine, as this New York Times lead illustrates: "A tobacco trade group has offered to test air quality at the American Cancer Society's offices, saying it would show pollutants other than cigarettes foul the indoors. But the society called the offer a 'public relations ploy'" (Associated Press, 1987b, p. a20).

Furthermore, once reporters started down that path, the balance routine of claim and counter-claim governed the flow of their pieces. Journalists stood back and let the two sides fight it out, as in this 1988 excerpt involving the "Great American Welcome":

> "We're seeing an increasing shrillness on the part of vocal anti-smokers pushing for legislative restrictions," said Brennan Dawson, a spokeswoman for the Tobacco Institute, the industry trade group that organized the campaign. . . . "We're going to protect our customers' rights, and our own rights." . . .
>
> "Our answer to the 'Great American Welcome' is that they are welcoming smokers to lung cancer, emphysema, and cardiovascular disease," said Irving Rimer, a spokesman for the American Cancer Society (McGill, 1988, p. 31).

The above quote also exemplifies how the Tobacco Institute tried to promote the Smokeout as an attack on smokers. Smoking opponents are not "anti-smoking," but "anti-smokers"—that is, they oppose the people, not the behavior. (In truth, of course, smoking opponents hope to lengthen smokers' lives—hardly an adversarial position.) In other Smokeout stories the Institute was less subtle in its labeling, as when President Walker Merryman commented on the American Cancer Society: "Their methods try to paint smokers as social pariahs" (Egerton, 1988, p. b12).

Some journalists—while not straying from the balance routine—did attempt to provide a context for the Institute counter-events. In one account, the "Great American Welcome" was prefaced this way:

> The campaign ignores scientific studies that have linked smoking to lung cancer, heart attack and stroke. It depicts smoking, whether in private or in public, as a matter of personal choice, and portrays the tobacco industry as the defender of smokers' civil rights (McGill, 1988, p. 31).

But such disclaimers were far from common. Nationwide, reporters covering the Smokeout in tandem with an industry counter-event hewed closely to the balance routine, and gave the American Cancer Society and the Tobacco Institute approximately equal billing. In every such instance, the Tobacco Institute was able to exploit the strategic ritual of balance and position itself as "the other side" of the Great American Smokeout "conflict."

The Tobacco Institute

Just as we would expect heightened coverage of the industry counter-events to the Smokeout in the tobacco region if economic influence were afoot, we would also expect heightened coverage of the Tobacco Institute, apart from any connection to the Smokeout. Likewise, just as economic influence would encourage tobacco region papers to legitimize industry counter-events by linking them with the well-established Smokeout, economic influence would also encourage those papers to legitimize the Tobacco Institute by linking it with the well-established American Cancer Society.

But notably, the latter would only apply in cases where it was advantageous to tobacco interests. All things being equal, regional economic influence would discourage coverage of the American Cancer Society—thereby muting its familiar anti-smoking message. But, in cases where mentioning the American Cancer Society is unavoidable (e.g., the Great American Smokeout), economic influence would encourage including the Tobacco Institute as an opposing source, to counterbalance the anti-smoking theme. In cases where the focus of a tobacco region story is the Tobacco Institute itself, economic influence would demand exclusion of the American Cancer Society—indeed, cancer should only be mentioned if absolutely necessary.

Expressed in testable terms, we would expect to find three things if regional economic influence is operating: (a) tobacco region newspapers devote more coverage to the Tobacco Institute than other regions, (b) tobacco region newspapers devote less coverage to the American Cancer Society than other regions, and (c) co-appearances of the Tobacco Institute and the American Cancer Society in stories represent a smaller percentage of total Tobacco Institute stories and a larger percentage of total American Cancer Society stories for tobacco region newspapers.

Table 3 illustrates that, collectively, the tobacco region papers did indeed devote more coverage to the Tobacco Institute in 1990, running 227 stories that mentioned the Institute as compared to the non-tobacco region's total of 131. Obversely, tobacco region newspapers were less likely to run stories that mentioned the American Cancer Society[4] (1,872 articles versus 2,573). This relationship was further validated by a chi-square test, which revealed that the proportion of Tobacco Institute stories to American Cancer Society stories was much greater in the tobacco region than in the non-tobacco region (x^2 [1] = 60.1, N = 4,743, p <.01).

The third expectation—that co-appearances of the Tobacco Institute and the American Cancer Society would favor industry interests in the tobacco region—was tested twice. First, the number of tobacco region co-appearances was taken as a proportion of tobacco region stories that only mentioned the Tobacco Institute (17 to 210), and that proportion was compared to its non-tobacco region counterpart (13 to 118). Second, the number of tobacco region co-appearances was taken as a proportion of tobacco region stories that only mentioned the American Cancer Society (17 to 1855), and that proportion was compared to its non-region counterpart (13 to 2560). In both cases, a chi-square test revealed the proportions were not significantly different (x^2 [1] = .62, and x^2 [1] = 2.62, respectively), although the pattern was in the hypothesized direction.

Thus, in sum, the regional economic influence hypothesis can be said to have been strongly supported by the first two prongs of our test for Tobacco Institute coverage in the Southeast (heightened coverage of the Tobacco Institute compared to coverage of the American Cancer Society), and only mildly supported by the third prong (co-appearances that favor the interests of the tobacco industry).

Discussion

In the preface to A Smoking Gun, Whelan echoes the feelings of many scholars who have studied media coverage of smoking, sensing "the presence of many invisible backstage hands orchestrating the successful effort to keep the health effects of tobacco off-stage, out of sight of a worried audience" (1984, p. xvii).

In this paper, we have attempted to turn a spotlight on those backstage hands, particularly those operating at the regional level. This paper found signs of regional economic influence from the tobacco industry in three areas: (a) a pro-tobacco spin on headlines for the David Burns story in the tobacco region (headlines being the most easily manipulated element in a wire story), (b) comparatively less tobacco region coverage of the Great American Smokeout in 1988 and slightly more coverage of the "Great American Welcome," and (c) comparatively much more tobacco region coverage of the Tobacco Institute in 1990 and much less coverage of the American Cancer Society. A few aspects of these findings merit discussion.

By its name, the Tobacco Institute connotes an agricultural think-tank, a place where botanists might congregate to discuss this or that hybrid. Thus, one might logically ask, "Why shouldn't the Southeast feature the Tobacco Institute more prominently?" After all, tobacco is a major cash crop in the region. We would argue the reason lies in the nature of the organization. Far from a local tobacco growers' cooperative, the Tobacco Institute is a well-financed public relations firm, bent on increasing the profits of its paymaster, the cigarette industry. Moreover, the Institute does not profess to serve the needs of any particular region of the country; the organization is based in Washington and addresses national issues, such as anti-smoking legislation or excise taxes. Clearly, allowing the Tobacco Institute an open forum cannot reasonably be said to educate the public, but instead can be seen as a means of bowing to economic pressure under the guise of newsworthiness.

Turning to the David Burns case, the lack of selective editing in the tobacco region suggests that wire stories exert a standardizing influence on coverage. Thus, in order for regional economic influence to override the standardizing influence of the wire, editors would have to selectively edit out material contrary to local industry interests, something few editors may have the time or the inclination to do. Of course, it could well be that tobacco region papers make no attempt to alter wire stories, but instead express support for the tobacco industry through other, more favorable stories generated in-house, such as fluff profiles of Tobacco Institute employees (Schlosser, 1988). Or, it could be that support for the tobacco industry exists in tobacco region newspapers, but in a form more subtle than we were able to detect.

Overall, though, given the lack of more striking regional differences in smoking coverage, we may more accurately argue that shared news routines and values act to standardize coverage of smoking nationwide. Still, we cannot dismiss tobacco's economic clout as an influence on content. We suggest instead that as a source of both powerful public relations pressure and valuable advertising support, the tobacco industry exerts an influence on content nationwide. For example, in exploiting the objectivity routine, the Tobacco Institute creates a "false balance" between tobacco interests and public health, an influence on content which is national, not regional.

The strategic ritual of balance as applied to smoking deserves more study than we can provide here. Suffice it to say, just as the objectivity routine proved dysfunctional during the accusation-ridden McCarthy years, so it would seem the balance routine proves dysfunctional on the subject of smoking and health. This argument was well-made in a letter to The New York Times, in which Harvard professor John Kenneth Galbraith protested the equal billing given to a tobacco industry spokesman, Timothy Hartnett:

> In the news story, while you give considerably more space to Dr. Dorn than to Mr. Hartnett, you treat the statements of both with equal respect. Does not this seeming impartiality mean, in fact, that

> you are allowing Mr. Hartnett to use you for his own purposes in a rather outrageous way? For years now the tobacco industry has been capping careful research reports with these unsupported denials. I certainly wouldn't suggest that you suppress Mr. Hartnett, but shouldn't you remind your readers of these past denials and the predictable character of this one? Indeed, shouldn't you make it wholly clear that you are not equating the work of careful researcher extending over years with the press releases of an industry spokesman? (Neuberger, 1963, pp. 26-27)

In summary, by examining influences on press coverage from a number of perspectives we hope to offer a more complete understanding of the news media. Here, for example, we have considered economic influence in conjunction with the routines of newswork—in particular, the strategic ritual of balance. According to the hierarchical model of influences on content suggested by Shoemaker and Reese (1991), economic influence and routines influence belong to different levels, but combining their explanatory power helps connect analysis across levels. Thus, the routines of newswork become in this case a channel through which economic influence is manifested. By isolating manifestations of influence—such as slanted headlines, selective editing, or "balancing" of sources—and integrating those findings within a theoretical perspective, we hope to provide insights into what shapes daily press coverage of smoking as well as to provide a framework for future study on other important public issues.

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Appendix

Full text of the initial Associated Press story on David Burns

A strong lobbying effort by the tobacco industry and a friendly congressman have succeeded in removing a respected scientist from an Environmental Protection Agency panel on second-hand cigarette smoke.

"I've never seen anything like this" in 12 years, said Steven Bayard, manager of the EPA project to assess passive smoking's health risks.

"I'm disturbed about this," he said Thursday. "I think it was lousy. I think it shows undue pressure, personally, from the tobacco companies and the Congress."

The scientist, Dr. David Burns of the University of California, San Diego, said that he had been told in an Aug. 10 letter that he was on the advisory panel on passive smoking.

On Thursday, he said that he was told by Robert Flaak of the EPA's Scientific Advisory Board that he would be removed from the panel. He criticized the decision.

"I am surprised that an EPA review would be swayed by pressure from the tobacco industry on an issue of science," Burns said, "when the tobacco industry is on record as disputing even the scientific evidence that cigarette smoking is related to lung cancer with active smokers."

The advisory panel's job is to review the EPA's forthcoming passive smoking reports to assure their scientific accuracy.

Burns has worked on the Surgeon General's smoking reports since the 1970s, and was editor of the 1986 report on passive smoking. Other researchers say his credentials are impeccable.

"I don't know of anyone else you could point to that would have the degree of expertise he would possess on smoking in general and the whole issue of passive smoking in particular," said Donald Shopland, coordinator of the National Cancer Institute's smoking control program and a longtime Burns colleague.

Dr. Thomas Novotny of the U.S. Office on Smoking and Health said, "Dr. Burns is a very well-respected researcher in the field of tobacco and health. I'd say he'd be a very good choice for the panel."

Bayard said that Burns was among 16 or 17 researchers who already had submitted a preliminary review of the EPA's report on passive smoking's health risks, and Burns' comments "were by far the best comments that I received."

On Aug. 10, the day Flaak wrote Burns inviting him to begin reviewing the EPA's passive smoking reports, the Tobacco Institute, an industry group, wrote EPA Administrator William Reilly protesting Burns' selection.

"Frankly, we are mystified how an individual with Dr. Burns's long and intense involvement with the antismoking movement can be expected to contribute to a reasonable, objective examination" of the EPA reports, the letter said.

Brennan Dawson, a Tobacco Institute spokeswoman, said, "We want a fair panel that will look at it objectively. Our concern is that Mr. Burns is unable to do that."

"This is an industry that continues to maintain that active cigarette smoking doesn't cause disease," said Burns. "The tobacco industry has continually maintained that this is an open scientific question. And that the only objective scientists are the ones who believe that it's an open question as to whether cigarettes cause any disease whatsoever."

On Sept. 18, Rep. Thomas Bliley, R-Va., wrote the EPA without mentioning Burns by name but urging that the panel "consist of qualified individuals who have not already prejudged this issue in any manner."

The aim of the letter was "to assure that any scientific advisory panel, for any study being done" will be fair, said Elizabeth Frazee, Bliley's press secretary.

Bliley is a strong tobacco industry ally. Philip Morris is the largest private employer in his congressional district. Bayard said that Bliley's letter was a factor in Burns' dismissal. (Raeburn, 1990k, p. a17)

Footnotes

[1] The VU/TEXT newspaper data base currently contains 72 papers from across the country. (The data base contained slightly fewer newspapers in 1987 and 1988.) To augment the sample, a few articles were found in the NEXIS newspaper data base using the same search terms.

[2] An attempt was made to add 1989 stories to the total sample, but many of the newspapers used for 1990 did not yet contribute to the data base in 1989.

[3] While tobacco region newspapers were matched on the basis of circulation (Koek & Winklepleck, 1991) and city population, only the circulation matches will be discussed. (Matching by population produced similar results and confirmed the validity of the matching method.) In addition to controlling for newspaper size, this sample matching procedure should also control for other confounds (such as the possibility of newspapers deleting certain stories from their data base contribution), since those artifacts would not be expected to vary by region.

[4] Because the American Cancer Society is a multi-faceted organization, the number of hits in Table 3 undoubtedly includes stories that do not directly address smoking (e.g., obituaries). But assuming such stories have an equal rate of occurrence in either region, the totals should still be comparable across regions.

Table 1

Headlines for the Initial Associated Press Story on David Burns

Inside tobacco region:

REMOVAL FROM EPA CIGARETTE PANEL LINKED TO TOBACCO LOBBY (Raeburn, 1990f)

SCIENTIST OPPOSED BY BLILEY IS TAKEN OFF SMOKING PANEL (Raeburn, 1990g)

TOBACCO LOBBYISTS, LAWMAKER GET SCIENTIST OFF EPA PANEL (Raeburn, 1990m)

TOBACCO BACKERS GET SCIENTIST TAKEN OFF PANEL ON SECOND-HAND SMOKE (Raeburn, 1990h)

TOBACCO LOBBYISTS TRIUMPH: 'ANTI-SMOKING' EXPERT REMOVED FROM PANEL (Raeburn, 1990n)

Outside tobacco region:

PASSIVE SMOKING EXPERT FORCED OUT (Raeburn, 1990e)

TOBACCO INDUSTRY CHANGES EPA PANEL (Raeburn, 1990i)

TOBACCO INDUSTRY LIGHTS A FIRE UNDER SCIENTIST. EPA DUMPS ANALYST FROM PANEL STUDYING 'PASSIVE SMOKING' (Raeburn, 1990j)

TOBACCO INDUSTRY'S LOBBYING GETS SCIENTIST REMOVED FROM EPA PANEL (Raeburn, 1990k)

LOBBYING REMOVES SCIENTIST FROM SMOKING PANEL (Raeburn, 1990c)

PANELIST REMOVED AFTER LOBBYING BY TOBACCO INDUSTRY (Raeburn, 1990d)

EPA DROPS SMOKING EXPERT (Raeburn, 1990b)

TOBACCO LOBBY OUSTS SCIENTIST (Raeburn, 1990l)[a]

[a] While the New Orleans Times-Picayune story (Raeburn, 1990l) appeared in the Southeast regional data base, it was considered outside the tobacco region, and included with the West region stories.

Table 2

Number of 1988 Stories Mentioning "Great American Smokeout" (GAS) and "Great American Welcome" (GAW)

TOBACCO REGION	GAS only	GAS w/ GAW	NON-TOBACCO REGION	GAS only	GAS w/ GAW
Atlanta Constitution/ Atlanta Journal[a]	4	3	Arizona Republic/ Phoenix Gazette	11	0
Richmond News Leader/ Times-Dispatch	2	1	Ft. Lauderdale News/ Sun-Sentinel	14	1
Charlotte Observer	12	0	Seattle Post-Intelligencer	5	0
The Columbia State	0	0	The Fresno Bee	4	1
Lexington Herald-Leader	8	1	The Wichita Eagle	2	0
	26	5		36	2

Note. Newspapers are matched horizontally by circulation. Total tobacco region circulation = 1,230,213. Total non-tobacco region circulation = 1,150,380.

[a] For some cities, VU/TEXT collapses two newspapers into a single search file. Such dual-newspaper files from inside the tobacco region were compared with similarly-sized dual files from outside the region.

Table 3

Number of 1990 Stories Mentioning "Tobacco Institute" (TI) and "American Cancer Society" (ACS)

TOBACCO REGION	TI only	TI w/ ACS	ACS only	NON-TOBACCO REGION	TI only	TI w/ ACS	ACS only
Atlanta Constitution/ Atlanta Journal	15	1	153	Arizona Republic/ Phoenix Gazette	29	2	825
Richmond News Leader/ Times-Dispatch	56	6	141	Ft. Lauderdale News/ Sun-Sentinel	12	3	156
Charlotte Observer	49	3	538	Pittsburgh Press	14	2	114
Memphis Commercial-Appeal	3	0	256	Seattle Post-Intelligencer	11	1	35
Norfolk Virginian-Pilot	5	0	211	The Fresno Bee	16	3	340
The Columbia State	7	2	56	San Francisco Examiner	10	0	31
Lexington Herald-Leader	41	0	170	The Wichita Eagle	7	1	496
Greensboro News & Record	17	2	87	Albany Times-Union	9	0	77
The Knoxville News-Sentinel	0	0	18	Atlantic City Press	4	1	154
Roanoke Times & World News	5	2	65	Gary Post-Tribune	4	0	134
Newport News Daily Press & Times Herald	12	1	160	Annapolis Capital	2	0	198
	210	17	1855		118	13	2560

Note. Newspapers are matched horizontally by circulation. Total tobacco region circulation = 1,915,961. Total non-tobacco region circulation = 1,822,368.